BEWARD
IP SURVEILLANCE

Operations User Manual

www.beward.eu

Wi-Fi IP CAMERA
N13103

Megapixel CMOS sensor
16 channel surveillance software included
Built-in multi-zone motion and audio detection

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Introduction

1.1. Overview of BEWARD N13103

BEWARD N13103 is a high-quality compact megapixel IP camera (*Pic. 1.1*) with built-in Wi-Fi IEEE 802.11 b/g/n module, microphone, megapixel CMOS sensor, 10x digital zoom and recording to memory card.

Pic. 1.1

BEWARD N13103 allows watching the real time image via a web browser from anywhere in the world. You can always hear and see what is happening in your home, office, or cottage and even talk to your employees or relatives. Unlike the ordinary web cameras, the N13103 does not require a computer that is always turned on; you need to simply connect it to a network.

This camera can be connected to a network via 10/100BASE-TX Ethernet or Wi-Fi IEEE 802.11b/g/n, which allows transferring data at up to 54 Mbps. The N13103 features WPS support, which allows this camera to be quickly set up and connected to a wireless network.

Compact enough to fit in the palm of your hand, the N13103 delivers crisp and clear images using the built-in high sensitivity CMOS sensor and advanced signal processing techniques.

The camera delivers video at 15 frames per second at 1280x1024 resolution and up to 30 frames per second at 640x480, previously only seen in professional CCD cameras.

The N13103 features a built-in microphone and supports external speakers, allowing two-way audio communication and offering both video surveillance and listening in on an area as well as communication with individuals.

The camera supports SD memory cards so that the camera can record files to the memory card when there is no wired or wireless connection with the camera. Also, when the memory card space is full, the camera overwrites the old files by the new ones.

BEWARD N13103 offers a cost-effective solution for professional indoor security surveillance and remote monitoring over a local network or the Internet. The camera is suitable for building a surveillance system in houses as well as small and medium-sized enterprises.

The N13103 supports dual streaming, an MPEG4 streaming and a user defined streaming (H.264, Motion JPEG or 3GPP compression is available). Such streaming options allow combining high-quality image and optimum bandwidth usage. H.264 provides high frame rate even in limited-bandwidth networks; MJPEG allows obtaining high-quality images; MPEG4 is a standard on video and audio coding supported by many applications; 3GPP allows viewing camera's stream on a cell phone or any other mobile device that supports 3GPP format, e.g. smart phones, PDA (iPhone supported as well).

The built-in motion detection can trigger an alarm and start recording when the camera detects motion. Besides, it can notify you when an alarm is triggered.

The N13103 supports IP Multicast, RTSP, RTP, and many other network protocols. The support for 802.1p and Dynamic DNS protocols allows the camera to be easily used with various Internet service providers. The camera supports HTTPS and SSL protocols, which allow secure video transmission. These protocols are even used to manage bank accounts.

The N13103 comes with everything you need to quickly set up your camera and start using it. User manuals and surveillance software in English are included. The N13103 is easy to use and set up.

1.1.1. N13103 Features

- Optimal solution concerning price and quality
- High-quality image
- SD memory cards support
- Wi-Fi 802.11b/g/n with WPS support
- Professional surveillance software included (16 channels)
- 1/4" progressive scan CMOS image sensor
- Multi-format H.264/MPEG-4/M-JPEG streaming
- Playing recorded files with the player integrated in the web interface
- Built-in microphone
- 3.5 mm audio jack out for external speakers
- Two-way audio
- Built-in multi-zone motion detection and audio detection
- Sending of images via e-mail and to FTP
- Recording to network attached storage (including to a shared folder on a computer running Windows or Linux installed)

- 10x digital zoom

1.1.2. The N13103 Specifications

- Image sensor: 1/4" progressive scan CMOS
- Lens: M12 interchangeable, f4.5 mm, F1.9 (angle of view: 47° (pan))
- Resolution: 1280x1024, 1280x720, 640x480, 320x240
- Sensitivity: 0.5 lux @ F1.9
- Shutter: electronic, 1/4 to 1/17780 seconds
- Frame rate: up to 30 frames per second at 640x480, 320x240; up to 15 frames per second at 1280x1024, 1280x720
- Video encoding: H.264, MPEG-4 or MJPEG
- Built-in microphone
- Supported protocols: Bonjour, TCP/IP, DHCP, PPPoE, ARP, ICMP, FTP, SMTP, DDNS, NTP, UPnP, RTSP, RTP, HTTP, TCP, UDP, 3GPP/ISMA RTSP
- Power: 12 V, 1 A DC
- Operating temperature: 0 to +50°C
- Operating humidity: 20-80% (non-condensing)
- ONVIF v1.02 support

1.1.3. Package Contents

- IP camera N13103 (M12, f4.5 mm, F1.9 pre-installed lens)
- Power supply 12 V, 1 A DC
- Bracket and mounting kit
- Patch cord (1 m length)
- CD with user manuals and software
- Quick installation guide
- Package

1.1.4. Default Settings

- IP address: **192.168.0.99**
- Subnet mask: **255.255.255.0**
- Gateway: **192.168.0.1**
- Username: **admin**
- Password: **admin**
- HTTP port: **80**
- RTSP port: **554**

1.2. Purpose of User Manual

BEWARD N13103 features a web server, network and wireless interfaces and can be connected to the Ethernet or Wi-Fi network directly.

The camera image can be viewed via a web browser or free Beward software, which comes with this camera. Besides, the live image can be viewed over mobile networks, via stream players, over the Internet remotely, etc.

This User manual provides information on camera's web interface, setting it up to connect to a network so that the camera can be managed by using a built-in web server as well as by software.

Despite some BEWARD IPS options are not available (see BEWARD IPS Operations User Manual) when you are managing the camera by a web browser or mobile device, it allows viewing camera image from any location in the world, though. Moreover, you can view it on any device such as a laptop, cell phone, PDA, etc. This User manual provides detailed information of managing the N13103 without using extra software.

Chapter 1. Minimum System Requirements

Verify that your computer meets the system requirements listed on the camera packaging. If your computer does not meet these requirements IP camera may not work correctly.

Item	Requirements
CPU	2.8 GHz Pentium 4 (or equivalent AMD)
Video Card	256 MB (or equivalent integrated video card)
RAM	1 GB
Operating System	Windows 2000, XP, Vista, Windows 7, Mac OS X Leopard (32 bit)
Web Browser	Internet Explorer 8.0 or later

NOTE:

1. If you cannot play records, please install Xvid codec or VLC freeware player (http://www.videolan.org/vlc/).

2. For correct program operation, you may need to update some Windows components (.Net Framework, Windows Media Player, Enhance ActiveX Security).

Chapter 2. Using Third Party Clients

The N13103 supports RTSP/RTP streaming.

RTSP (Real Time Transfer Protocol) is a network control protocol designed for use in entertainment and communications systems to control streaming media servers. The protocol is used for establishing and controlling media sessions between end points. Clients of media servers issue VCR-like commands, such as play and pause, to facilitate real-time control of playback of media files from the server.

NOTE:
You can play RTSP stream with any supported video player (Real Player, VLC, Quick Time, etc).

2.1. Playing 3GP Video

You can view camera image on a computer as well as a mobile device such as cell phones, smart phones, PDA, etc (iPhone supported as well). You can configure the stream to be viewed on a mobile device at ***SETTING — Camera — Profile 2*** and select 3GPP format in the **[Streaming]** drop-down menu.

If your phone does not support streaming video, type **«rtsp://<IP>:<PORT>/video.3gp»** in a streaming player installed in your phone to view the 3GP video. **<IP>** means public IP address of your camera, **<PORT>** means RTSP port (default value is 554). Example: rtsp://100.10.10.1:554/video.3gp.

2.2. Playing Streaming Video in 2.5G Networks over WAP

If your phone is used on a 2.5G network, type «**http://<IP>/mobile.wml**» in the WAP browser's address bar to the view video over WAP. **<IP>** means public IP address of your camera.

2.3. Playing Streaming Video in 2.5G Networks via Browser

If your phone is used on a 2.5G network, type «**http://<IP>/mobile.htm**» in the browser's address bar to view the video. **<IP>** means public IP address of your camera.

2.4. Playing Streaming Video via Third Party Software

If your computer (or cell phone, smart phone, etc) is connected to high-speed Internet or you need to view streaming video in other formats, you can use real time RTSP players such as VLC, Quick Time, Real Player, etc.

NOTE:
Connection speed to the camera depends on the bandwidth.

2.4.1. Playing H.264 Video

Type **rtsp://<IP>:<PORT>/video.h264**, **<IP>** means IP address of your camera, **<PORT>** means RTSP port of your camera (default value is 554). Example: rtsp://89.57.167.76:554/video.h264.

2.4.2. Playing MPEG-4 Video

Type **rtsp://<IP>:<PORT>/video.mp4**, **<IP>** means IP address of your camera, **<PORT>** means RTSP port of your camera (default value is 554). Example: rtsp://89.57.167.76:554/video.mp4.

2.4.3. Playing MJPEG Video

Type **rtsp://<IP>:<PORT>/video.mjpg**, **<IP>** means IP address of your camera, **<PORT>** means HTTP port of your camera (default value is 80). Example: rtsp://89.57.167.76:80/video.mjpg.

IMPORTANT:
To view MJPEG or H.264 video, make sure you selected the required stream in ***SETTING –Camera – Profile 2.***

2.4.4. Getting a JPEG Image

Type **http://<IP>:<PORT>/jpg/image.jpg**, **<IP>** means IP address of your camera, **<PORT>** means HTTP port of your camera (default value is 80). Example: rtsp://89.57.167.76:80/jpg/image.jpg.

NOTE:
You can get 5-6 images per second maximum.

Chapter 3. Managing the IP Camera via Internet Explorer

Step 1: connect your camera according to the User manual.

Step 2: open Internet Explorer, type your camera's IP address in the address bar. The default IP address is **192.168.0.99**.

NOTE:

There are two ways to assign an IP address to an IP camera.

1. An IP address can be obtained automatically from a Dynamic Host Configuration Protocol (DHCP) according to the network parameters.
2. Use a manually specified IP address. See paragraph 8.1 for details. Contact your system administrator to avoid IP address conflict.

NOTE:

To view camera image without showing control panel, type «**http://<IP>/index2.htm**» in browser's address bar. **<IP>** means IP address of your camera

Step 3: enter username and password in the authorization window (*Pic. 3.1*).

The default user name is «**admin**», the default password is «**admin**».

Windows Security
The server 192.168.0.99 at N13103 Megapixel IP Camera requires a username and password.
Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).
User name
Password
Remember my credentials
OK
Cancel

Pic. 3.1

IMPORTANT:

You can change user name and password at ***SETTING – System – Account***. If you forgot your user name or password, you can reset your camera to factory settings by holding **[RESET]** button during 10-15 seconds. Hold **[RESET]** button during 5-7 seconds to restart the camera.

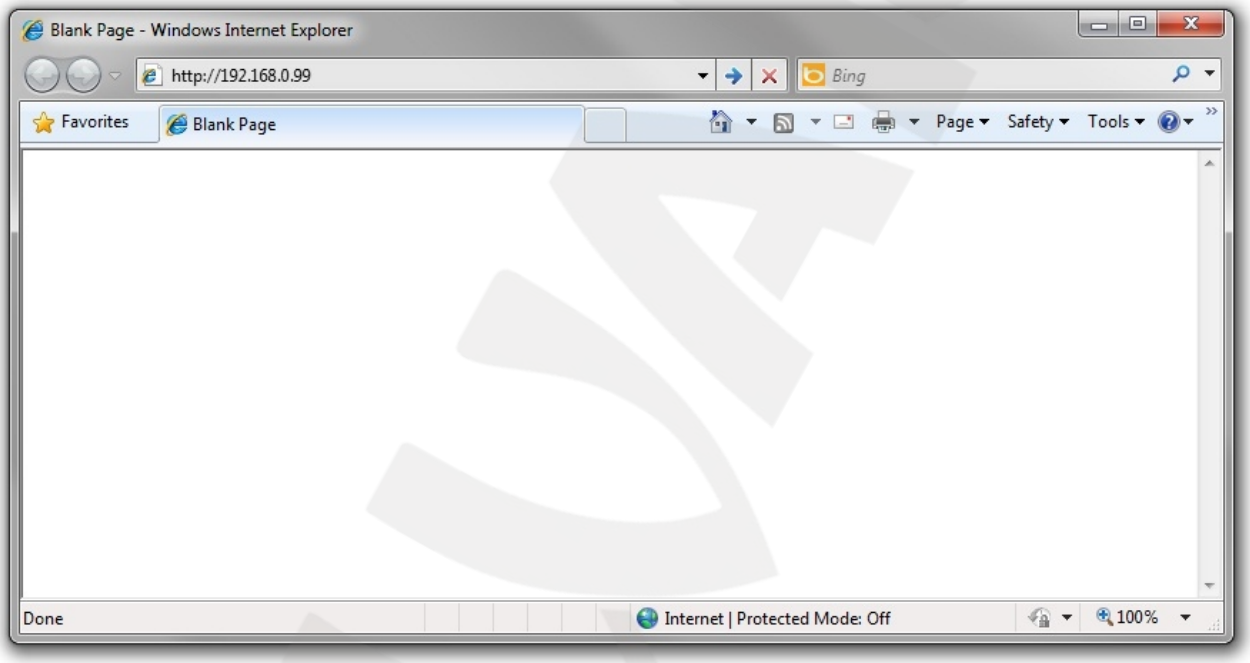
By default, Windows prevents ActiveX add-ons from running which are required to operate an IP camera. Therefore, you need to install the ActiveX add-on to operate your camera.

Chapter 4. Installing ActiveX Controls

To view camera image via Internet Explorer, you need to install ActiveX controls. To do so, follow these steps:

NOTE:
The installation is shown for Internet Explorer 8.0 and Windows 7.

Step 1: open Internet Explorer, type the IP address of your camera in the address bar (*Pic. 4.1*). Press **Enter** or click **Go To** button.



Pic. 4.1

IMPORTANT:
The camera's default IP address is **192.168.0.99**. If the camera was assigned with an IP address by a DHCP server in a local network, you should search your camera by BEWARD IP Installer. If you use several IP cameras, you need to change their default IP addresses so that each camera will have a unique IP address.

NOTE:
To connect to the camera, you need to get your computer and your camera to the same subnet.

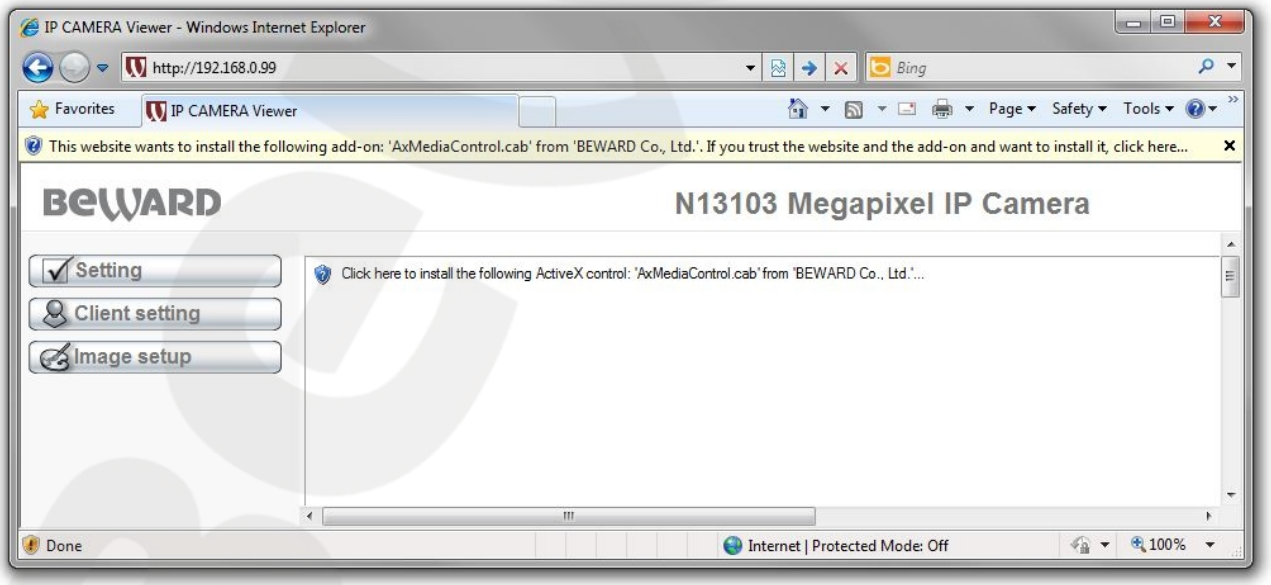
Step 2: you will see an authorization window where you should enter your user name and password (*Pic. 4.2)*

Windows Security
The server 192.168.0.99 at N13103 Megapixel IP Camera requires a username and password.
Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).
User name
Password
Remember my credentials
OK
Cancel

Pic. 4.2

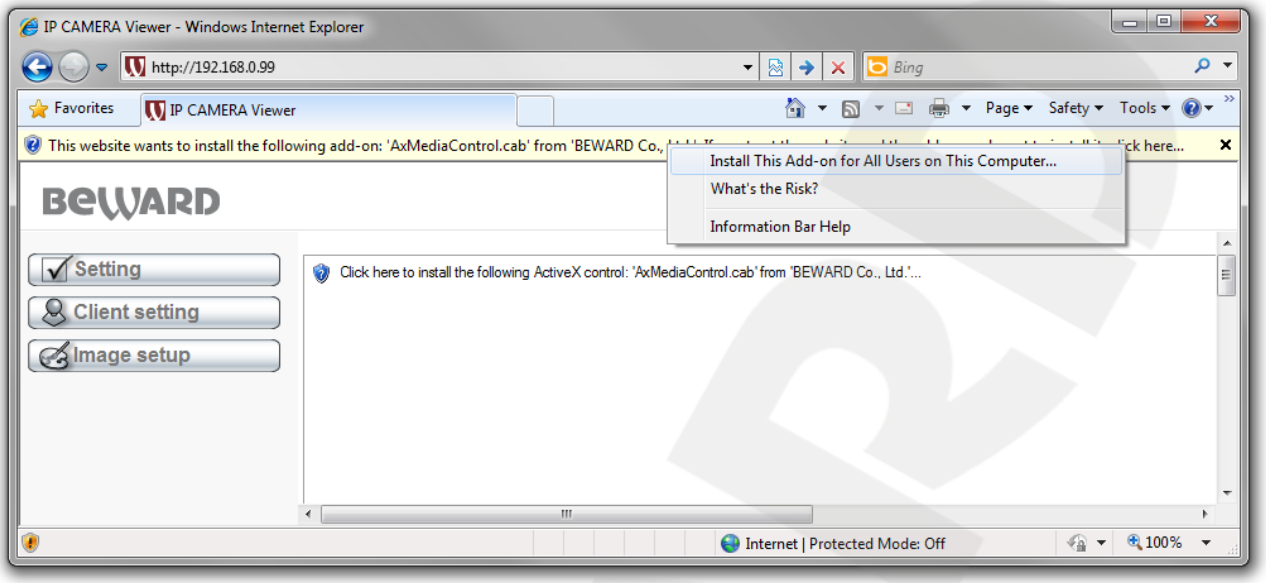
IMPORTANT:
Default user name is **admin**, default password is **admin**.

Step 3: after successful authorization you will be prompted to install an ActiveX add-on. You will see a system notification under the address bar: **"This website wants to install the following add-on: "AxMediaControl.cab" from "BEWARD Co., Ltd.". If you trust the website and the add-on and want to install it, click here…"** (*Pic. 4.3*).


IP CAMERA Viewer - Windows Internet Explorer
http://192.168.0.99
Bing
Favorites
IP CAMERA Viewer
Page
Safety
Tools
This website wants to install the following add-on: 'AxMediaControl.cab' from 'BEWARD Co., Ltd.'. If you trust the website and the add-on and want to install it, click here...
BEWARD
N13103 Megapixel IP Camera
Setting
Client setting
Image setup
Click here to install the following ActiveX control: 'AxMediaControl.cab' from 'BEWARD Co., Ltd.'...
Done
Internet | Protected Mode: Off
100%

Pic. 4.3

Step 4: click right mouse button on this notification. In the drop-down menu select **"Install This Add-on for All Users on This Computer…"** or click on the area **"Click here to install the following ActiveX control: "AxMediaControl.cab" from "BEWARD Co., Ltd."…"**. (*Pic. 4.4*)



Pic. 4.4

NOTE:
Titles of system menu and notifications may differ from the titles of system menu and notifications that appear in other versions of Windows and Internet Explorer.

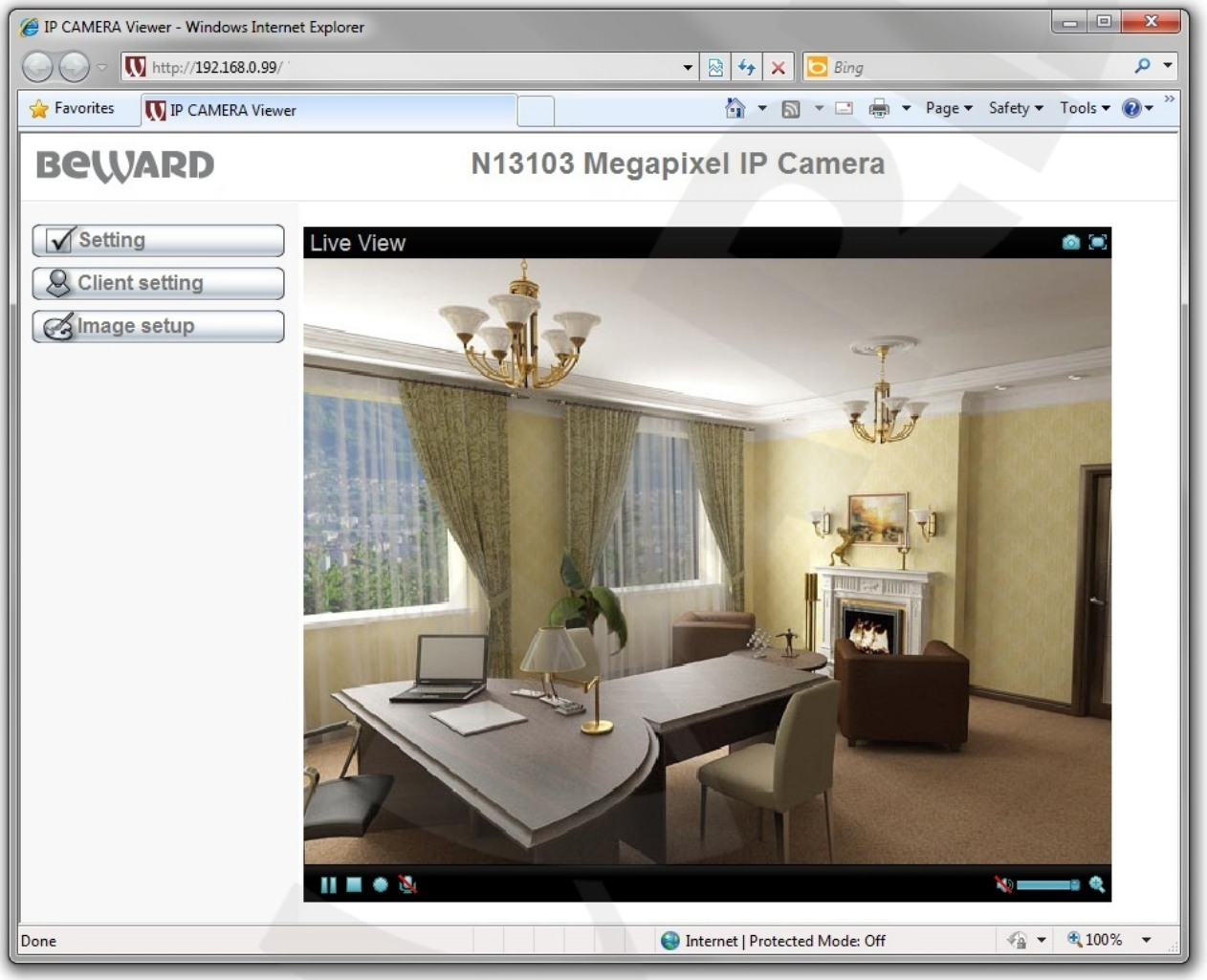
Step 5: by default, Internet Explorer prevents ActiveX add-ons from installation, click **[Install]** to continue. (*Pic. 4.5*)

Internet Explorer - Security Warning
Do you want to install this software?
Name: AxMediaControl.cab
Publisher: BEWARD Co., Ltd.
More options
Install
Don't Install
While files from the Internet can be useful, this file type can potentially harm your computer. Only install software from publishers you trust. What's the risk?

Pic. 4.5

NOTE:
When installing an ActiveX control for Windows 7 or Vista with enabled User Account Control (UAC), prevents it from installation and generates such a message. Click yes in the appeared window.

Step 6: if everything was done correctly, you should get the camera image via browser. The settings bar is on the left side, the camera image is on the right side (*Pic. 4.6*). Detailed information is discussed later in this Manual.

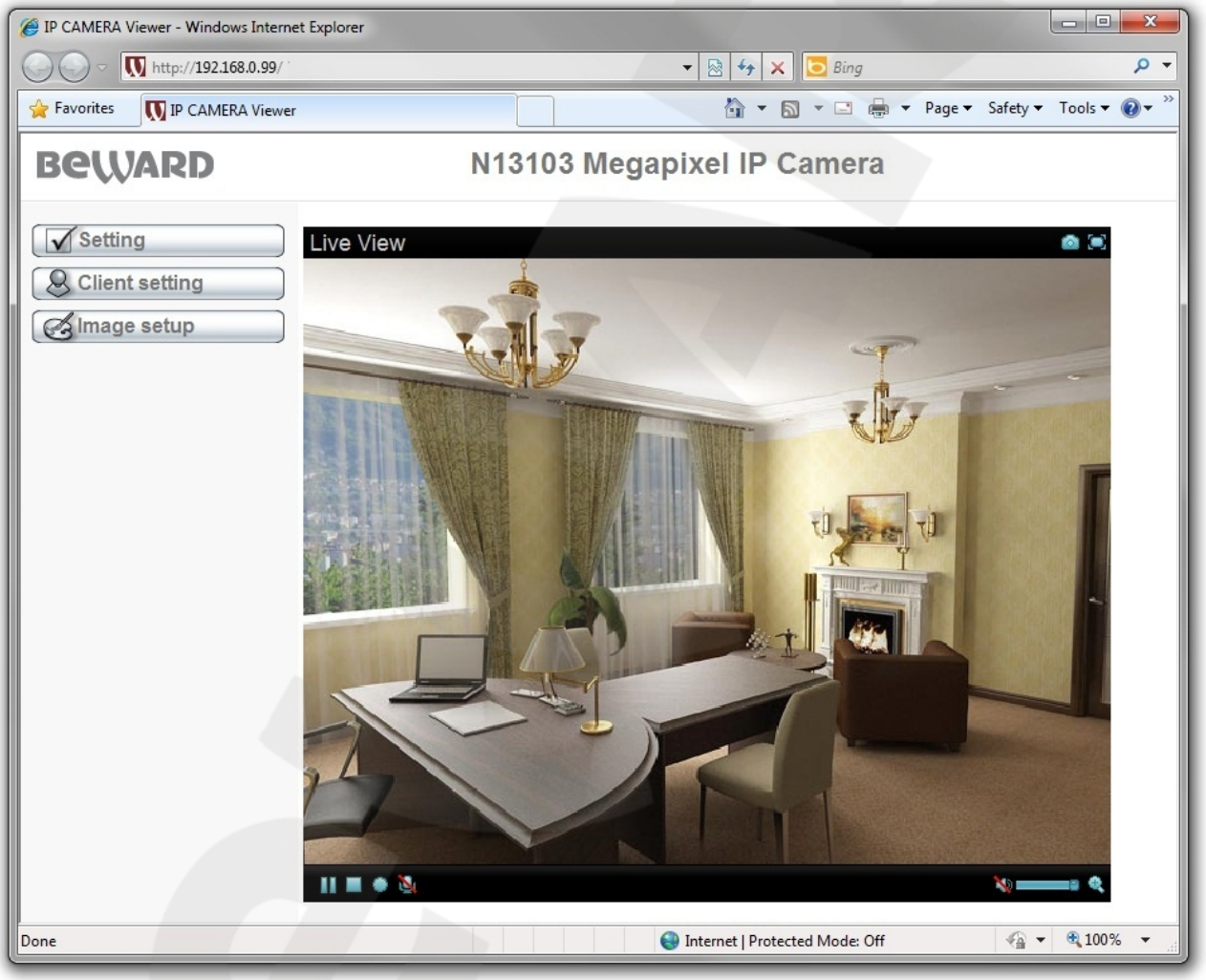


Pic. 4.6

Chapter 5. Main Menu

The main menu consists of two panes. The left pane contains **[Setting]**, **[Client setting]**, and **[Image setup]** menu. (*Pic. 5.1*).

The right pane contains the **"Live view"** window, which displays real-time camera image. Also, this pane contains the following buttons: **[Snapshot]**, **[Fullscreen]**, **[Open digital zoom]**, **[Start record]**, **[Microphone]**, **[Pause]**, **[Play/Stop]**, and **[Volume]** (*Pic. 5.1*). These functions are discussed later in this Manual.



Pic. 5.1

5.1. Live View

This pane displays real-time camera image and allows you to control it.

5.1.1. [Snapshot] Button

This button allows you to save snapshots from your camera to your computer. To do so, click the icon and specify the path where you want to save the snapshot.

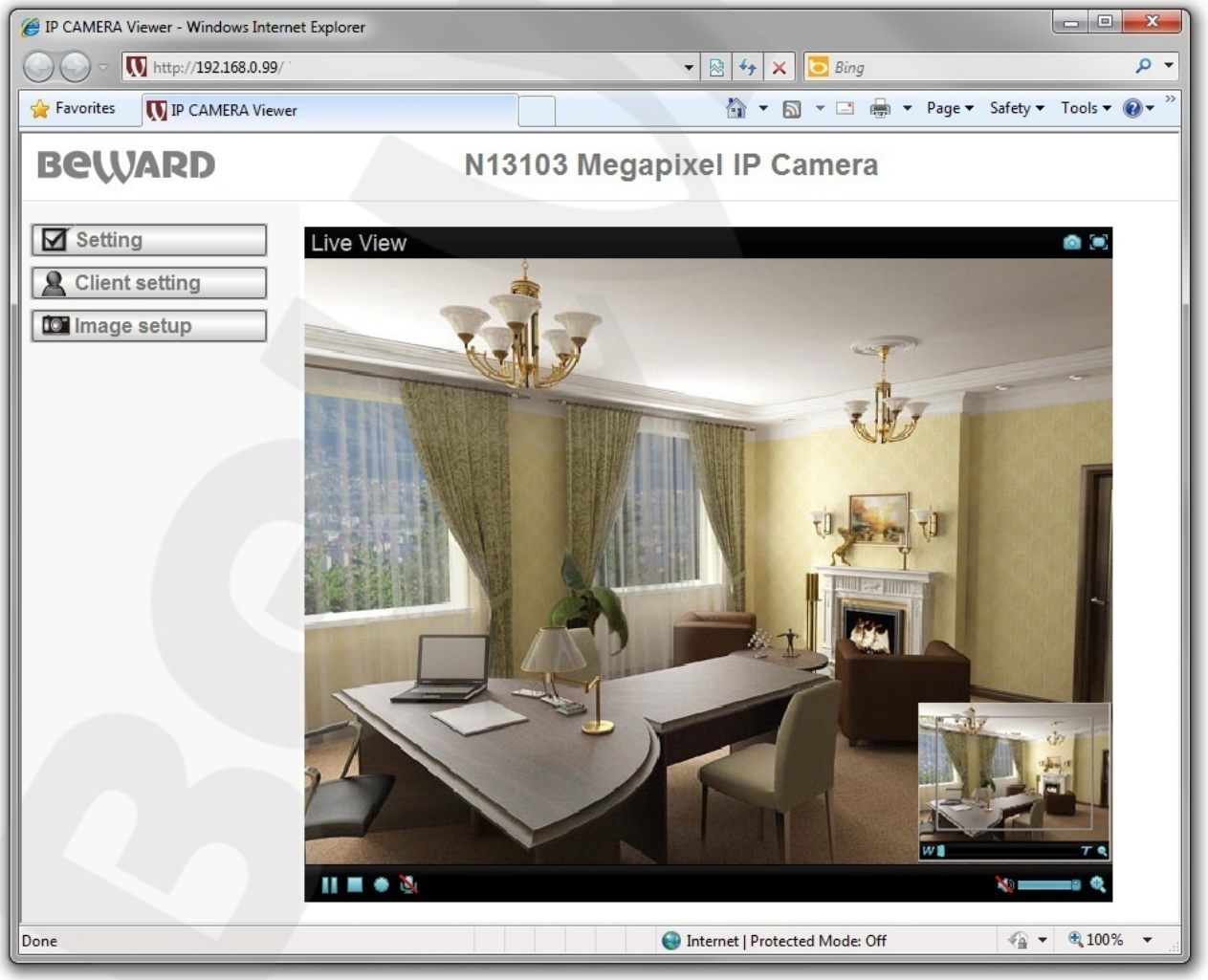
NOTE:
When specifying the path, check the permissions on a folder where you want to save a snapshot. If you do not have the permissions, you cannot save snapshots there.
In Windows 7, you need to start Internet Explorer as an administrator to save records on your local HDD.

5.1.2. [Fullscreen] Button

Click the button to hide controls and stretch the image to fill the screen. Press **[ESC]** or double-click left mouse button to exit full screen mode.

5.1.3. [Open Digital Zoom] Button

Click the button to magnify a specific area of the image. Drag the slider to the toward the magnification level that you want (W means wide (no magnification)/T means tele (maximum magnification)). Move this frame to the desired area. Click the button to exit the digital zoom mode and save the selected magnification. (*Pic. 5.2*)



Pic. 5.2

NOTE:

The image zoom is applied only for the current image in a browser. Its parameters are saved in the browser's temporary folder. The next time you open the browser, the image will be with magnification that was set when you previously closed the browser (if the option for saving settings is enabled in the browser). If the image is viewed in software, these magnification settings will not be applied.

5.1.4. Video Control Buttons

Icon	Function
	[Pause]: click this button to temporarily pause viewing camera image.
	[Play]: click this button to resume viewing camera image.
	[Stop]: click this button to stop viewing camera image.
	[Start record]: click this button to specify the path for saving records and start recording video.
	[Stop record]: click this button to stop recording video.

IMPORTANT:

To playback recorded video, use the integrated player at ***SETTING – Camera – Playback***, otherwise you may need to install third party software, e.g. VLC media player. Its official website is http://www.videolan.org/vlc/.

NOTE:

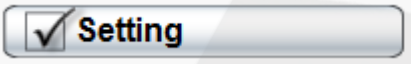
When specifying the path, check the permissions on a folder where you want to save a snapshot. If you do not have the permissions, you cannot save snapshots there.

In Windows 7, you need to start Internet Explorer as an administrator to save records on your local HDD.

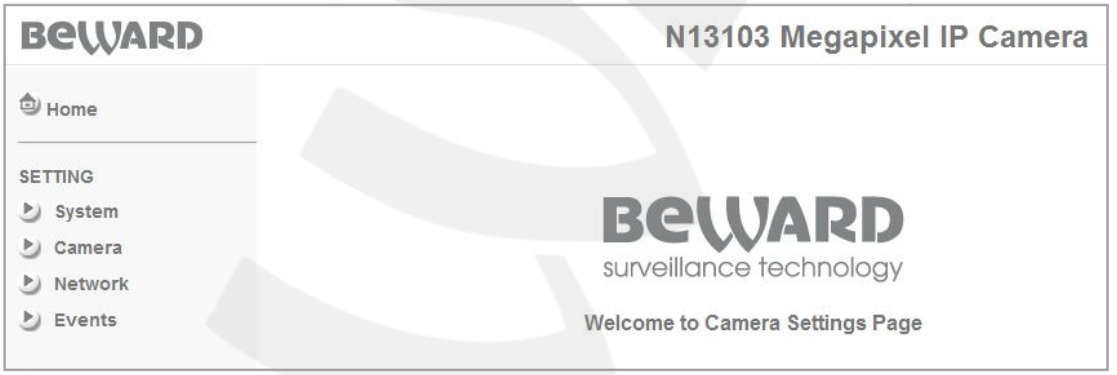
5.1.5. Audio Control Buttons

Icon	Function	Comments
	[Sound enabled]	Allows listening to camera microphone sounds (Audio In) through the speakers connected to your computer (if the microphone is connected to the correct jack).
	[Sound disabled]	Disables listening to camera microphone sounds through the speakers connected to your computer.

	[Mic is on]	You can transmit sound through a microphone connected to your computer to speakers connected to your camera (Audio Out).
	[Mic is off]	Disables listening to sounds through speakers connected to your camera.
	[Volume level]	Move this slider to a required level to adjust the volume level of the sound transmitted from your camera (if the microphone is connected to the correct jack).

5.2. Setting Menu 

This menu is used to configure an IP camera (*Pic. 5.3*). The menu is divided into **«System»**, **«Camera»**, **«Network»**, and **«Events»** sections, which are used to adjust and configure the IP camera.



Pic. 5.3

IMPORTANT:
This menu is available only for administrators.

The **«System»** menu contains the following sections: **[Information]**, **[Date/Time]**, **[Account]**, **[System Log]**, and **[Initialize]** (*Pic. 5.4*). Detailed information is discussed later in this Manual.

Pic. 5.4

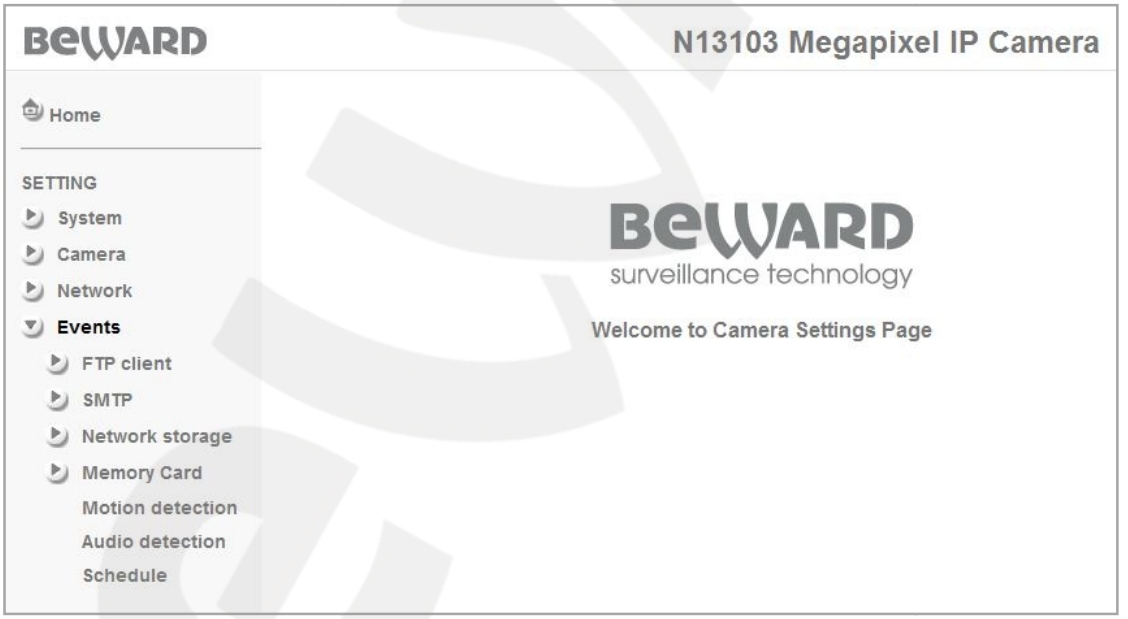
The **«Camera»** menu contains the following sections: **[General]**, **[Profile 1]**, **[Profile 2]**, **[Advanced]**, and **[Playback]** (Pic*. 5.5*). Detailed information is discussed later in this Manual.

Pic. 5.5

The **«Network»** menu contains the following sections: **[Information]**, **[PPPoE]**, **[DDNS]**, **[UPnP]**, **[IP notification]**, **[WPS]**, and **[Wireless]** (Pic*. 5.6*). Detailed information is discussed later in this Manual.

Pic. 5.6

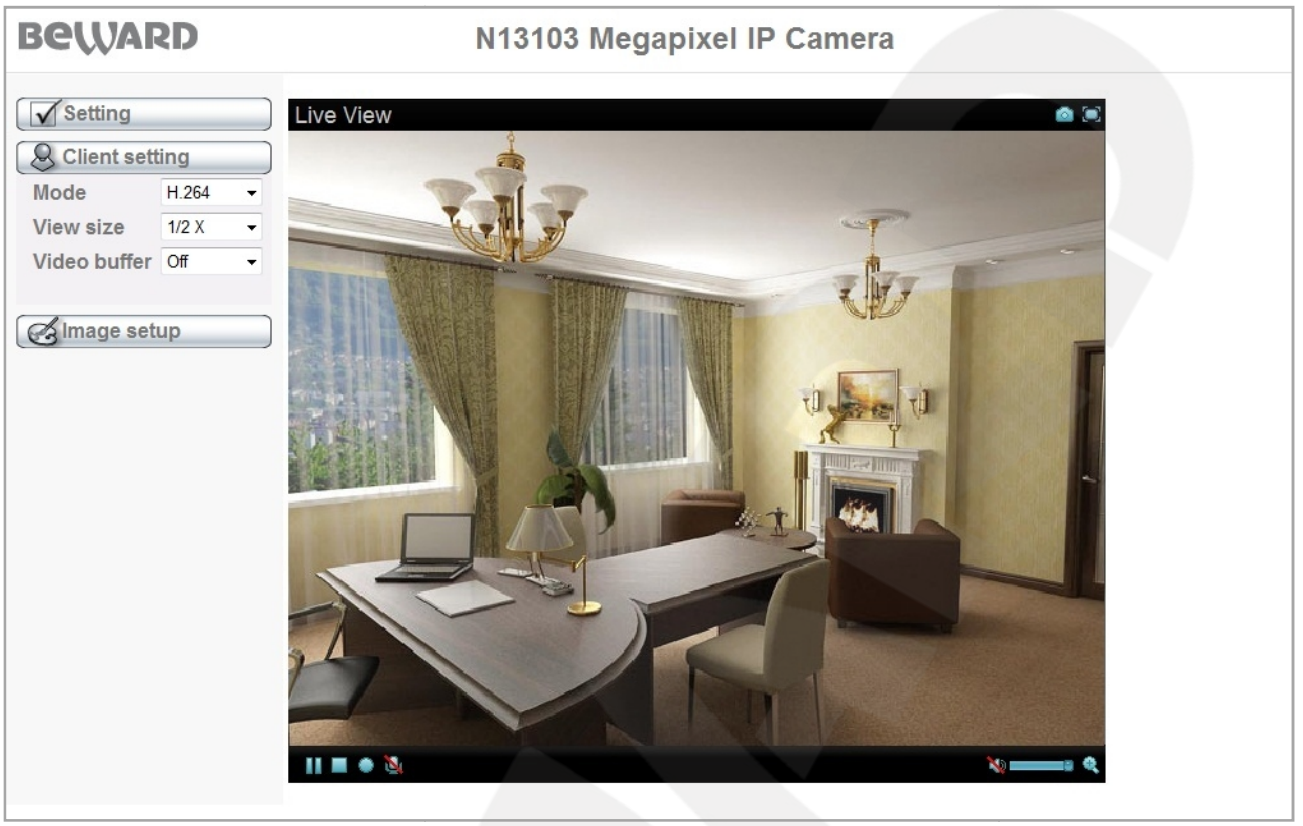
The **«Events»** menu contains the following sections: **[FTP client]**, **[SMTP]**, **[Network storage]**, **[Memory card]**, **[Motion detection]**, **[Audio detection]**, and **[Schedule]** (Pic. *5.7*). Detailed information is discussed later in this Manual.



Pic. 5.7

5.3. Client Setting

This menu allows a user to adjust camera image. These settings are applied only to the image viewed via the browser and do not change the camera itself. This menu contains the following sections: **[Mode]**, **[View size]**, and **[Video buffer]** (*Pic. 5.8*).



Pic. 5.8

5.3.1. Mode

This item allows you to select a video format: MPEG-4 and JPEG are available by default. Note that H.264 and MJPEG formats are optional and their displaying depends on the format selected at ***SETTING – Camera – Profile 2***.

5.3.2. View size

This item allows you to adjust image magnification: 1:1, 1:2 or 1:4.

5.3.3. Video Buffer

This item allows you to enable or disable video buffer function. When this function is enabled, it makes the video stream from the IP camera smoother when the connection is unstable but may cause image delays up to several seconds.

5.4. Image Setup

This menu allows you to adjust **[Brightness]**, **[Contrast]**, **[Saturation]**, **[Sharpness]**, and **[Exposure]** (*Pic. 5.9*).

Pic. 5.9

5.4.1. Brightness

This item allows you to increase or decrease the image brightness.

5.4.2. Contrast

This item allows you to increase or decrease the image contrast.

5.4.3. Saturation

This item allows you to increase or decrease the image saturation. If the saturation is set to its minimum, the image will be black and white.

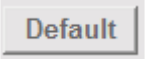
5.4.4. Sharpness

This item allows you to increase or decrease the image sharpness.

5.4.5. Exposure

This item allows you to adjust the electronic shutter.

5.4.6. Default



Click this button to restore the following items to their default settings: brightness, contrast, saturation, sharpness, and exposition.

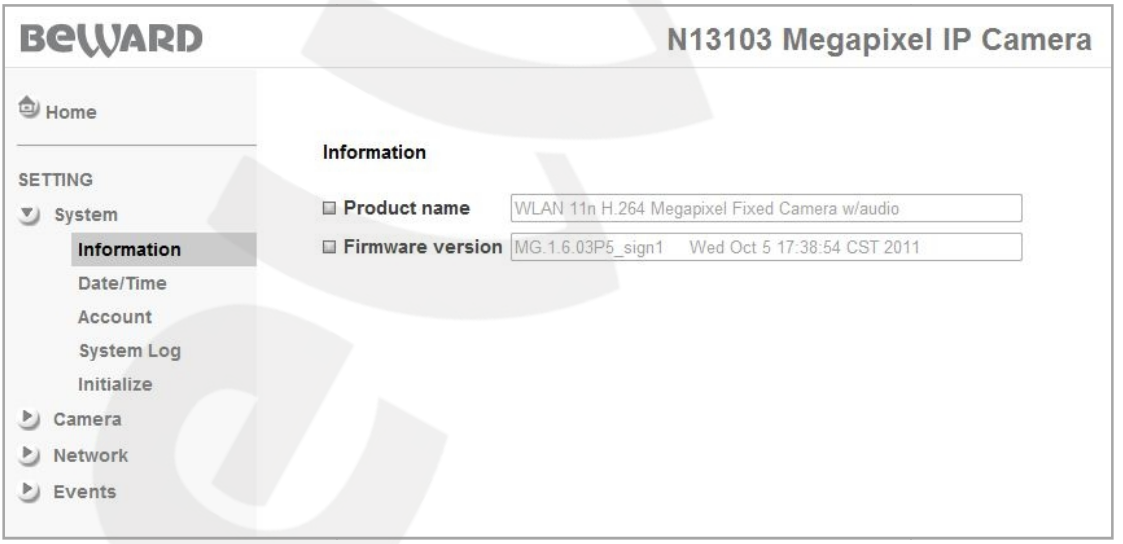
Chapter 6. SETTING: System

This menu contains the following sections: **[Information]**, **[Date/Time]**, **[Account]**, **[System Log]**, and **[Initialize]** (*Pic. 6.1*).

Pic. 6.1

6.1 Information

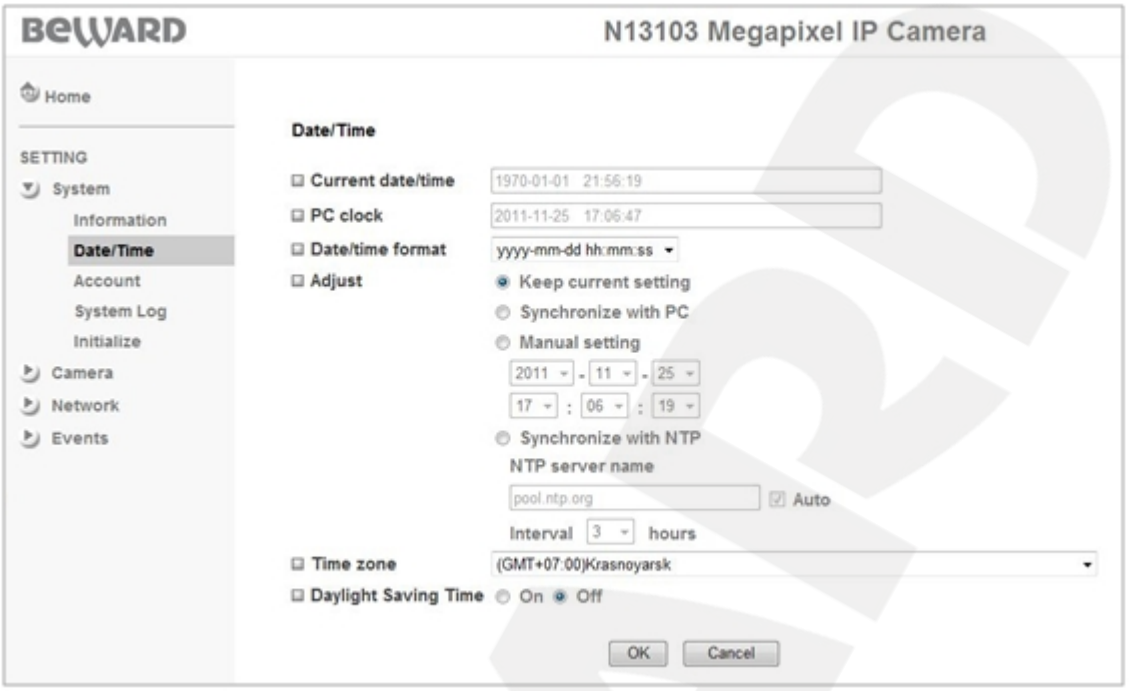
This section contains device's name, firmware version, and web interface version (*Pic. 6.2*).



Pic. 6.2

6.2. Date/Time

This menu allows a user to set device date and time (*Pic. 6.3*).



Pic. 6.3

Current date/time: displays the current date and time of the IP Camera.

IMPORTANT:

After you restart the camera, its date and time will be reset to their default values: **1970-01-01 00:00:00**. It is recommended to use the **[Synchronize with NTP]** option to set the correct date and time.

PC clock: displays date and time on a computer, which is used to connect to the camera (client computer)

Date/Time format: allows you to select date/time format.

Adjust: allows you to select how to set the camera date and time.

- **Keep current setting**: leaves the current date and time as they are.
- **Synchronize with PC**: use the same date and time as on a computer, which is used to connect to the camera.
- **Manual setting**: select this mode to adjust the camera the date and time manually.
- **Synchronize with NTP**: allows you to synchronize your camera clock with an NTP server (Network Time Protocol) located in the Internet (e.g. time.windows.com, time.nist.gov, etc). Select an NTP server name and a time update interval (by default, camera clock is typically updated once an hour).

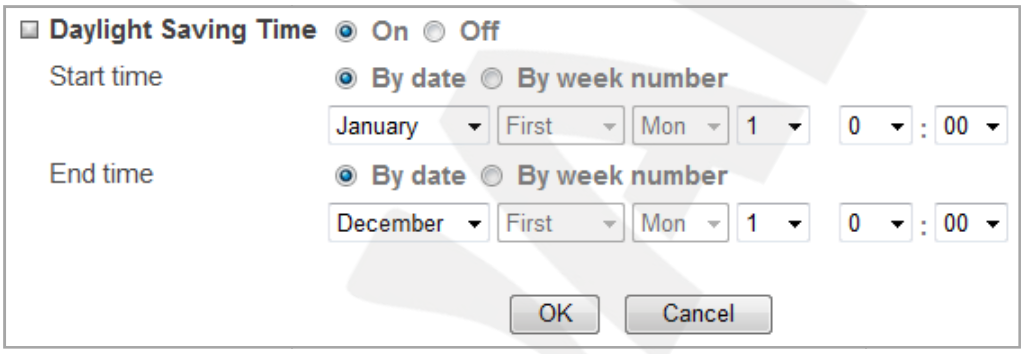
NOTE:

By default, the camera synchronizes clock with the following NTP server: pool.ntp.org.

IMPORTANT:
To synchronize time with an Internet time server, an NTP server must be located in a local network or in the Internet. The camera must be connected to the Internet to synchronize time with an Internet time server.

Time Zone: select your current time zone for the camera. The correct time zone is important for the correct synchronization with an NTP server.

Daylight Saving Time: this item allows your camera's clock to be automatically adjusted when daylight saving time changes. This parameter is important for the correct synchronization with an NTP server. You can specify the start time and the end time so that the camera's clock could be adjusted by date or by week number (*Pic. 6.4*).

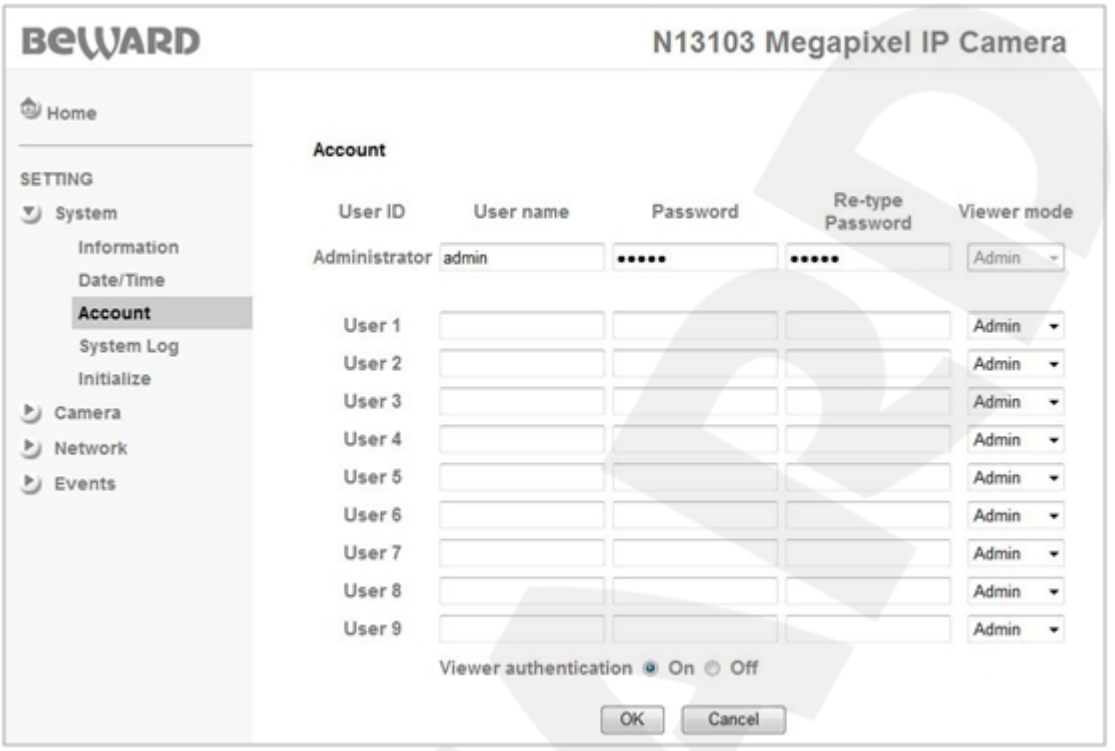


Pic. 6.4

6.3. Account

This section allows managing user privileges, adding new user accounts with different privileges.

The camera has a built-in Administrator account and its username and password are «**admin** / **admin**». This is a main user account and you cannot change its privileges but you can change its username and password. Besides, the Administrator can add up to 9 user accounts with different privileges (*Pic. 6.5*).



Pic. 6.5

User name: type a username (5-16 characters).

Password: type a password (5-16 characters). You can use a blank password.

Re-type Password: re-type the entered password to avoid mistakes in password assignment. If you re-type the password incorrectly, you will see an error message.

IMPORTANT:

The username and password may contain only Latin letters.

Viewer mode: allows you to set user permissions. The following options are available:

- **Admin**: this user is able to change any parameters
- **Operator**: this user is able to view camera image and adjust image parameters. The Operator can access the **[Client setting]** and **[Image setup]** menu.
- **Viewer**: this user is able only to view camera image. The Viewer can access only the **[Client setting]** menu.

Viewer authentication: this item allows you to turn on or off user authorization to access the camera image.

- **On**: when this option is selected, a user needs to enter the username and password to access the camera.
- **Off**: when this option is selected, a user does not need to enter a username and password to access the camera. A user may specify one of the following viewer modes: Admin, Operator, and Viewer.

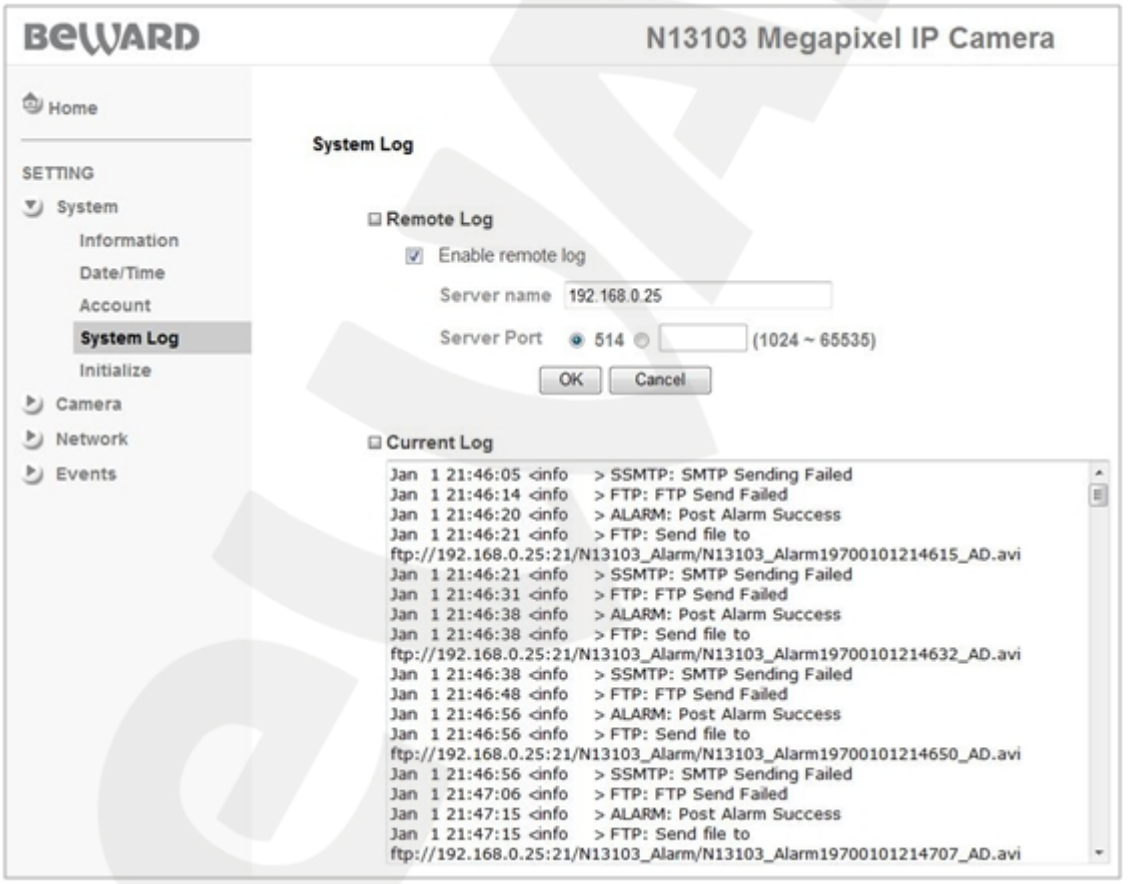
When your account does not have sufficient permissions to access a menu, you receive an authorization window that prompts you to login as an account that has the sufficient privileges.

To add or change the account, enter or correct the information in the required fields. Click **[OK]** to save changes.

NOTE:
It is recommended to change the default username and password to help preserve image privacy and provide configuration change protection.

6.4. System Log

The system log contains the changes of camera parameters as well as the events. The entries are added automatically after the camera is turned on (*Pic. 6.6*).



Pic. 6.6

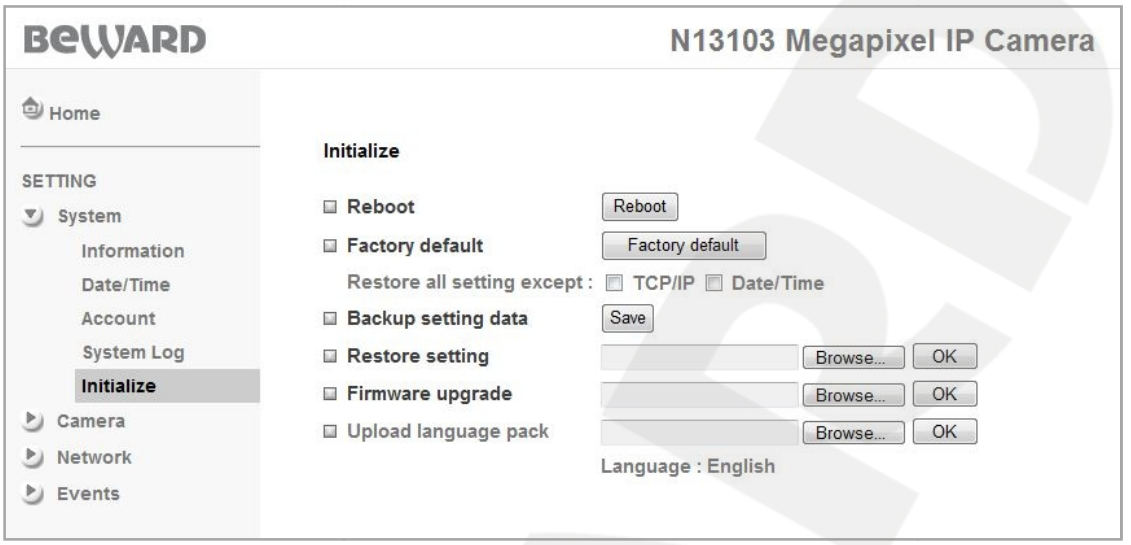
Enable remote log: allows you to send information from the system log to a remote server.

Server name: type the remote server name or IP address.

Server port: type a port value to access the server (the default value is 514).

Current log: this field contains system log entries.

6.5. Initialize



Pic. 6.7

[Reboot]: click this button to restart the camera. The camera takes 1-2 minutes to restart. If you click the **[Reboot]** button, the confirmation dialog box appears. The user will be prompted to continue or cancel the reboot. Click **[OK]** to continue or click **[Cancel]** to cancel the reboot.

[Factory default]: click this button to reset the camera to factory defaults. After that, the camera will restart. All settings including IP address and Date/Time will be reset to their defaults.

However, it is possible to leave date/time and IP address at their current values. To do so, check the **[TCP/IP]** and **[Date/Time]** boxes in the **[Restore all setting except]** item.

Do not turn off power to the camera until the reboot is completed!

If you click the **[Factory Default]** button, the confirmation dialog box appears. The user will be prompted to continue or cancel the reset to factory defaults. Click **[OK]** to continue or click **[Cancel]** to cancel.

NOTE:
See the **Appendix E** for default values of some parameters.

Backup setting data: you can save the camera settings to a file. Click **[Save]** and specify the path where you want to save the settings and enter the file name.

NOTE:
When specifying the path, check the permissions on a folder where you want to save a snapshot. If you do not have the permissions, you cannot save snapshots there.
In Windows 7, you need to start Internet Explorer as an administrator to save records on your local HDD.

Restore setting: allows you to restore previously saved settings. Click **[Browse]** button. In the appeared window select the required file by clicking your left mouse button on the name of the file and click **[Open]**. Click **[OK]** to start restoring the settings. When the restoration is completed, the camera automatically restarts to apply the settings.

Firmware upgrade: this item allows you to update the camera firmware. Click **[Browse]** button. In the appeared window select the required file by clicking your left mouse button on the name of the file and click **[Open]**. Click **[OK]** to start updating the firmware.

NOTE:
When the firmware is updated, all settings may automatically restore to their defaults. Before you start updating the firmware, it is recommended to perform a backup of camera settings.

When the update is completed, the camera automatically restarts.

IMPORTANT:
When the update is completed, it is recommended to reset camera settings to their factory defaults.

IMPORTANT:
Be careful when you update camera firmware. Make sure that you use only the firmware designed for your IP camera. Using the wrong firmware file may cause your camera to become inoperable. The manufacturer is not liable for the incorrect firmware update. Do not disconnect your camera until the update is completed.

Upload language pack: this menu allows you to change the web interface language by loading a language file pack (*Pic. 6.7*).

IMPORTANT:
Be careful when you loading a language pack. Make sure that you use only the language pack designed for your IP camera. Using the wrong language pack may cause your camera to become inoperable. The manufacturer is not liable for the incorrect loading of a language pack.

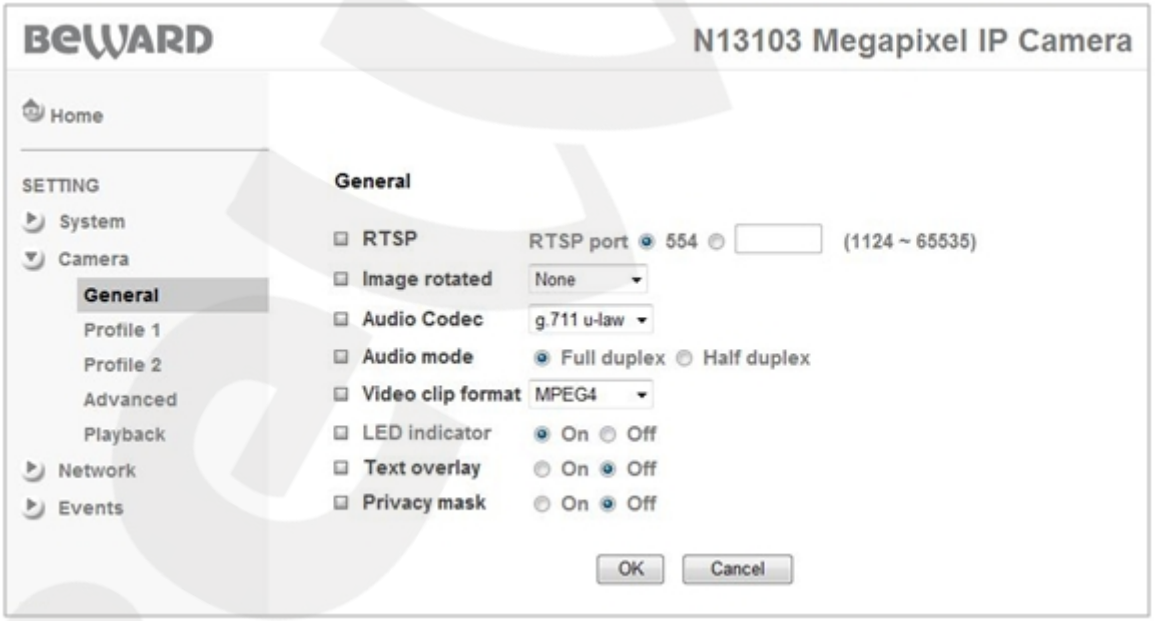
Chapter 7. SETTING: Camera

The **«Camera»** menu contains the following sections: **[General]**, **[Profile 1]**, **[Profile 2]**, **[Advanced]**, and **[Playback]** (*Pic. 7.1*).

Pic. 7.1

7.1. General

This menu allows you to configure video stream and other functions (*Pic. 7.2*).



Pic. 7.2

RTSP: this item allows you to configure RTSP stream. You can change the value of the port (the default value is 554). This is a standard and reserved port therefore it is not recommended to change its value. You can set the value of the port between the values of 1124 and 65535.

Image rotated: this menu allows the image to be rotated. The following options are available: **«None»** - the image is not rotated; **«Mirror»** - the image is mirrored around the vertical axis; **«Flip»** - the image rotated 180°; **«Mirror»** + **«Flip»** - the image is mirrored and rotated 180°.

Audio codec: this item allows you to select an audio compression format. The following options are available:

- **g.711 μ-law**: select this option to set audio compression based on this standard.
- **g.711 α-law**: select this option to set audio compression based on this standard.
- **AMR Audio**: select this option to set audio compression based on this standard. When this option is selected, the following values are available for the **[Bit rate]**: 4.75, 5.15, 5.9, 6.7, 7.4, 7.95, 10.2, 12.2 kbps. The wider the bandwidth, the higher sound quality.
- **Off**: sound is disabled.

Audio mode: you can select **[Full duplex]** audio or **[Half-duplex]** audio.

NOTE:
When **[Half-duplex]** is selected, you can either transmit sound through a microphone connected to your computer to speakers connected to your camera or through a microphone connected to your camera to speakers connected to your computer.

Video clip format: this menu allows you to select a video recording format. You can set H.264 or MPEG4.

NOTE:
This item is available only when H.264 is selected at ***SETTING – Camera – Profile 2***. If any other format is selected at this menu, the **[Video clip format]** will be unavailable to edit and will be set to MPEG-4.

LED indicator: this menu allows you to manage the built-in LED, which provides high-quality surveillance under low-light conditions.

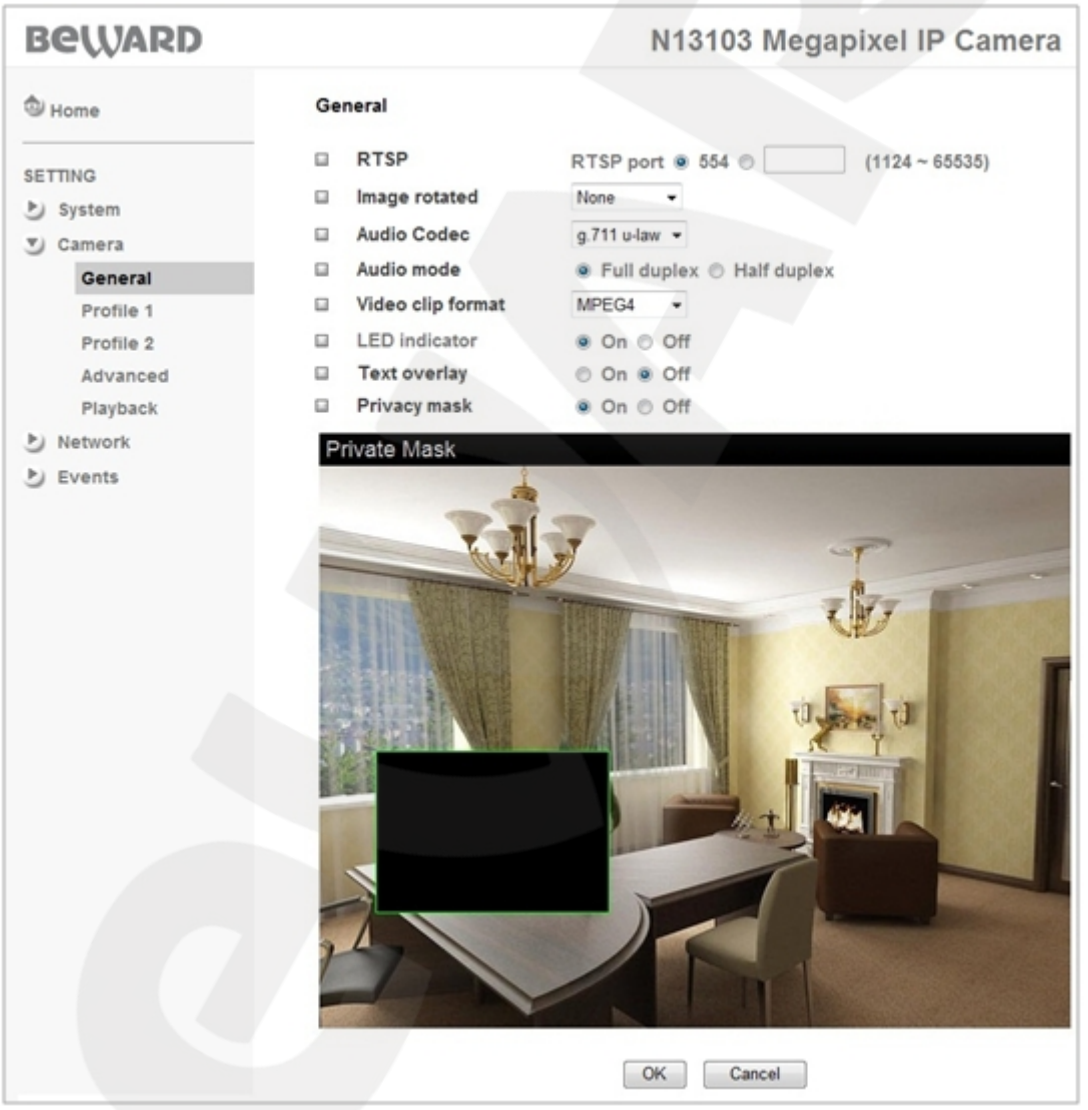
- **On**: the LED is always turned on.
- **Off**: the LED is always turned off.

Text overlay: you can enter any text (for example, device name) and/or date and time. You can change **[Text color]**, **[Background color]**, and its **[Display position]** (*Pic. 7.3*).

Pic. 7.3

NOTE:
The **[Alias]** field may contain only numbers or uppercase letters (A-Z), 6 characters maximum.

Privacy mask: you can set a privacy mask on the camera image so that an area protected by privacy mask will not be displayed and recorded. This feature is useful when the camera observes objects that should not be recorded or it is forbidden to record them, for example, a door security lock or a safe. To prevent observing such an area, apply a privacy mask on it (*Pic. 7.4*).

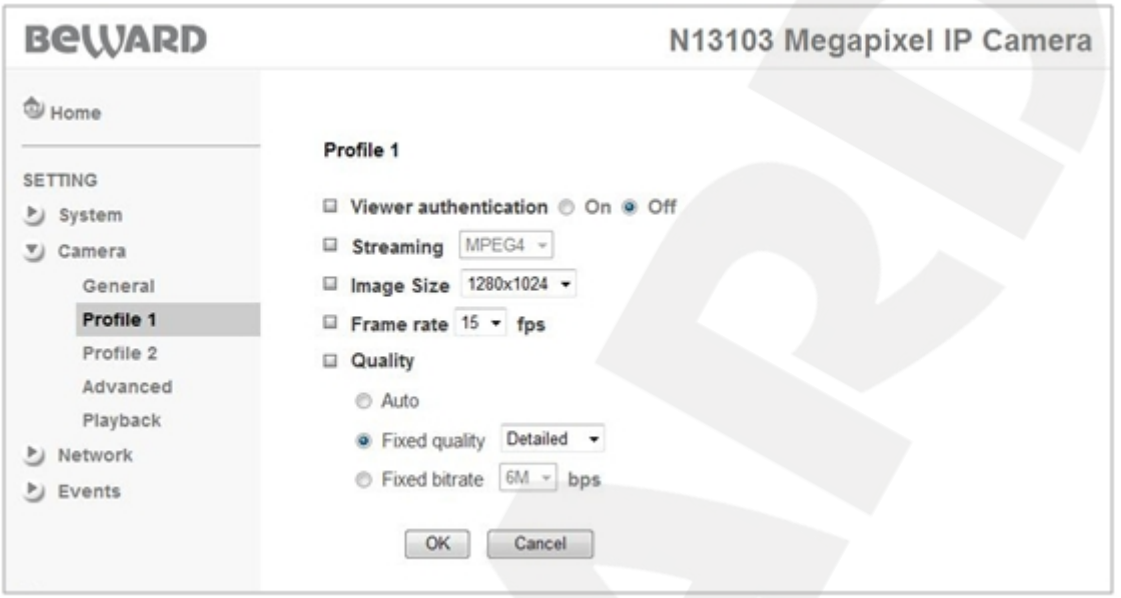


Pic. 7.4

If you want to change the size, drag the right bottom corner of the frame. Also, you can adjust the size anytime by dragging any of its corners or move the privacy mask to the required position.

7.2. Profile 1

This section contains the camera stream settings that are applied to the Profile 1 (*Pic. 7.5*).



Pic. 7.5

Viewer authentication: if this option is enabled, a user should enter user name and password to view camera image via third-party players such as Quick Time, VLC, etc.

Streaming: this item displays the stream encoding type that is used in the Profile 1. In this profile, it is impossible to change the encoding type and it is set to its default value (MPEG-4). However, it is possible to select other encoding type in the **Profile 2** section.

Image size: allows you to set the following image resolution: 1280x1024, 1280x720, 640x480 or 320x240. Sets image resolution for connections via software.

Frame rate: allows you to set streaming rate in frames per second for MPEG-4. The following values are available: 2, 3, 4, 5, 7, 10, 15, 20, 25 and 30 frames per second depending on image resolution. When 1280x1024 or 1280x720 resolution is set, the following frame rate values are available: 2, 3, 4, 5, 7, 10, 15. When 640x480 or 320x240 resolution is set, the following frame rate values are available: 2, 3, 4, 5, 7, 10, 15, 20, 25, 30.

NOTE:
If you want to use a frame rate value higher that 15, you need to set a resolution not higher than 640x480 in the **Profile 1** and the **Profile 2**.

Quality: allows you to set the video stream quality. The default value is the **[Fixed quality]**.

- **Auto**: the camera automatically adjusts image quality and frame rate depending on bandwidth. If the bandwidth decreases, the camera automatically changes image quality but keeps the frame rate constant.

- **Fixed quality**: this option allows you to select any of the following quality levels: **[Excellent]**, **[Detailed]**, **[Good]**, **[Standard]**, and **[Medium]**.

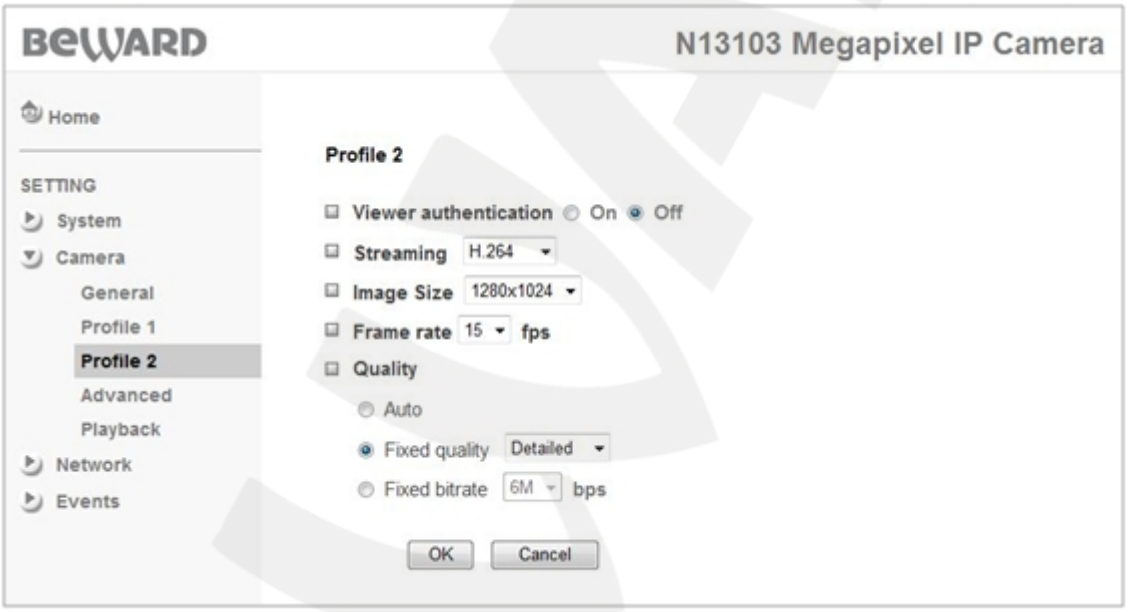
NOTE:

See the **Appendix A** for the detailed information about the **[Fixed quality]**.

- **Fixed bitrate**: allows you to set the fixed bitrate. The following values are available: 64, 128, 256, 384, 512, 768 kbps and 1, 1.5, 2, 3, 4, 5, 6 Mbps.

7.3. Profile 2

This section contains the camera stream settings that are applied to the Profile 2. It is possible to select between H.264, MJPEG, and 3GPP encoding (*Pic. 7.6*).



Pic. 7.6

Viewer authentication: if this option is enabled, a user should enter user name and password to view camera image via third-party players such as Quick Time, VLC, etc.

Streaming: this item allows selecting the stream encoding type that is used in the Profile 2. In this profile, it is impossible to select between H.264, MJPEG, and 3GPP encoding.

Image size: allows you to set the following image resolution: 1280x1024, 1280x720, 640x480 or 320x240 for **H.264** and **MJPEG** encoding; 320x240 and 160x120 for 3GPP streaming.

Frame rate: allows you to set a frequency at which the camera produces unique consecutive images per second for each encoding type. The following values are available for H.264 and MJPEG: 1, 2, 3, 4, 5, 7, 10, 15, 20, 25 and 30 frames per second depending on image resolution. When 1280x1024 or 1280x720 resolution is set, the following frame rate values are available: 1, 2, 3, 4, 5, 7, 10, 15. When 640x480 or 320x240 resolution is set, the following frame

rate values are available: 1, 2, 3, 4, 5, 7, 10, 15, 20, 25, 30. When 3GPP is used, only 5 and 10 fps values are available.

NOTE:
If you want to use a frame rate value higher that 15, you need to set a resolution not higher than 640x480 in the Profile 1 and the Profile 2.

Quality: allows you to set the video stream quality. The default value is the **[Fixed quality]**.

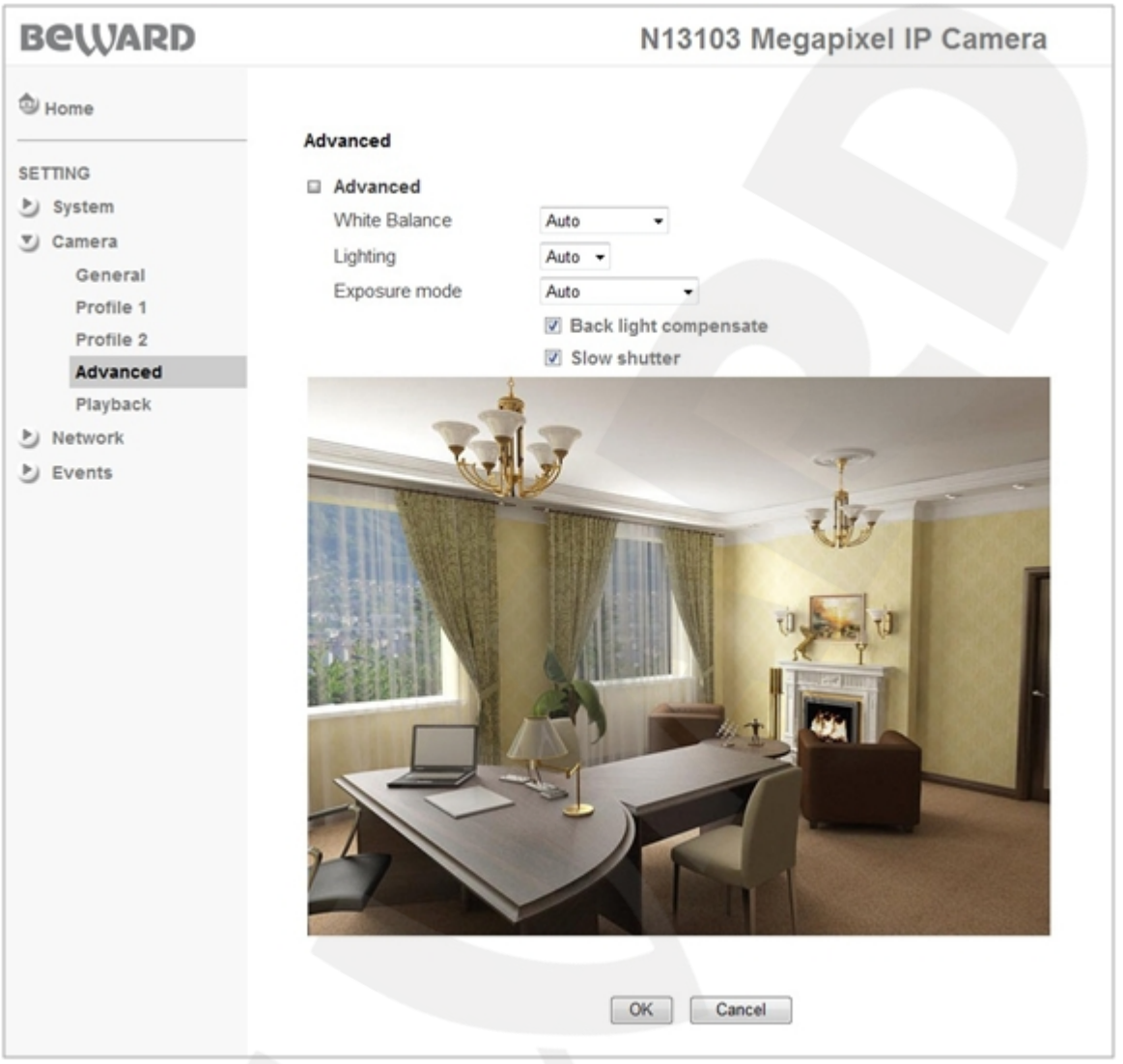
- **Auto**: the camera automatically adjusts image quality and frame rate depending on bandwidth. If the bandwidth decreases, the camera automatically changes image quality but keeps the frame rate constant.
- **Fixed quality**: this option allows you to select any of the following quality levels: **[Excellent]**, **[Detailed]**, **[Good]**, **[Standard]**, and **[Medium]**.

NOTE:
See the **Appendix A** for the detailed information about the **[Fixed quality]**.

- **Fixed bitrate**: allows you to set the fixed bitrate. The following values are available: 64, 128, 256, 384, 512, 768 kbps and 1, 1.5, 2, 3, 4, 5, 6 Mbps. This option is available only if H.264 is selected.

7.4. Advanced

This menu allows you to adjust image parameters and to manage image sensor (*Pic. 7.7*).



Pic. 7.7

White balance: the following modes are available: **[Auto]** – automatic white balance; **[Fluorescent]**; **[Incandescent]**; **[Sunny]**; **[Cloudy]**. The default option is **[Auto]**. An important goal of white balance is to render colors correctly.

- **[Auto]**: the camera looks at the overall color of the image and calculates the best-fit white balance. This is a default option for the white balance item and it is recommended to use it.
- **[Fluorescent]**: white balance is corrected according to fluorescent lightning.
- **[Incandescent]**: white balance is corrected according to tungsten lightning.
- **[Sunny]**: white balance is corrected considering color rendering characteristics of objects on a sunny day.
- **[Cloudy]**: white balance is corrected considering color rendering characteristics of objects on a cloudy day.

Lighting: this item allows you to adjust shutter time to the illumination level.

- **50 Hz**: select this option if the camera is used indoor where AC-powered illumination sources at 50 Hz are used.
- **60 Hz**: select this option if the camera is used indoor where AC-powered illumination sources at 60 Hz are used.
- **Auto**: select this option if the camera is used under mixed illumination (sunlight and indoor illumination) or under bright sunlight.

IMPORTANT:
When the camera is used under bright sunlight, the image may blink or be too light. To avoid this, select the option for **[Auto]**.

Exposure mode: this item allows you to select an electronic shutter mode. The following modes are available: **[Auto]**, **[High speed mode]**, **[Manual]**.

Auto: when this mode is selected, electronic shutter speed is adjusted automatically. When this option is selected, the following items are available:

- **Back light compensate**: you can enable backlight compensation. It allows correcting the exposure of subjects that are in front of a bright light source.
- **Slow shutter**: you can set electronic shutter speed from 1/5 to 1/120 s.

NOTE:
This option is useful when the camera is installed in low-light environments. However, when it is enabled, it decreases frame rate.

High speed mode: electronic shutter speed is set automatically (maximum value is 1/120 s).

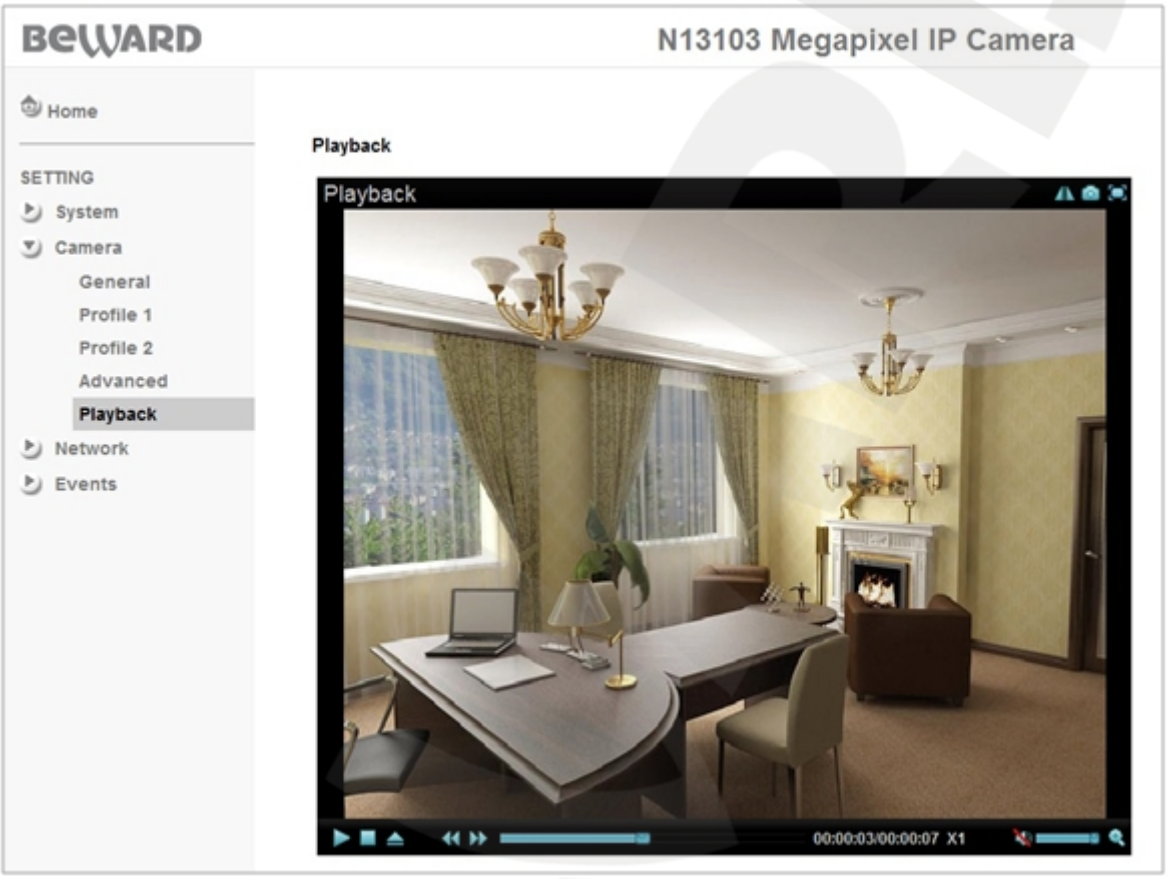
NOTE:
When this mode is selected, it sets electronic shutter speed to 1/120 s or higher depending on illumination level. This mode is suitable for fast moving objects, for example, auto racing, sports, etc.

Manual: when this mode is selected, you can set electronic shutter speed manually. When this option is selected, the following items are available:

- **Shutter speed**: the following values are available: 1/4, 1/5, 1/10, 1/25, 1/50, 1/100 s.
- **Gain**: you can set gain value from 0 to 9 in increments of 1. The higher the value, the brighter the image but it causes more noise under low-light conditions.

7.5. Playback

This section allows you to view video that is recorded via camera web interface (e.g. files, recorded by clicking the **[Record]** button in the main window or records, saved to network attached storage) (*Pic. 7.8*).



Pic. 7.8

NOTE:
This menu allows playing AVI video records.

The playback control buttons are shown in the table below:

Icon	Function	Purpose
	[Mirror/Flip]	Rotate/mirror image.
	[Snapshot]	Saves a snapshot. Snapshot format depends on resolution of the recorded file.

	[Fullscreen]	Expands the size of the image screen to cover the whole height and width of your monitor.
	[Play/Pause]	Plays the selected file. If a file is currently being played, the **[Play]** button becomes the **[Pause]** button.
	[Stop]	Stops playing the selected file. If you click the **[Play]** button after you click the **[Stop]** button, the file starts playing from the beginning.
	[Open files]	Opens recorded files.
	[Increase speed]	Fast-forwards the video that you are playing. Double-click this button to change the playback rate to x2, x4. Click the «Decrease speed» to slow the playback rate.
	[Decrease speed]	Slows the playback rate. Double-click this button to change the playback rate to x1/2, x1/4. Click the «Increase speed» to fast forward the playback rate.
	[Timeline]	Displays the total playback time and the current position of the video.
	[Volume]	Allows you to adjust the volume control.
	[Open digital zoom]	Zooms in the video that you are playing.

To playback a video, click the **[Open files]** button, select a video file in the appeared window and click the **[OK]** button. Click the **[Play]** button to play the video file.

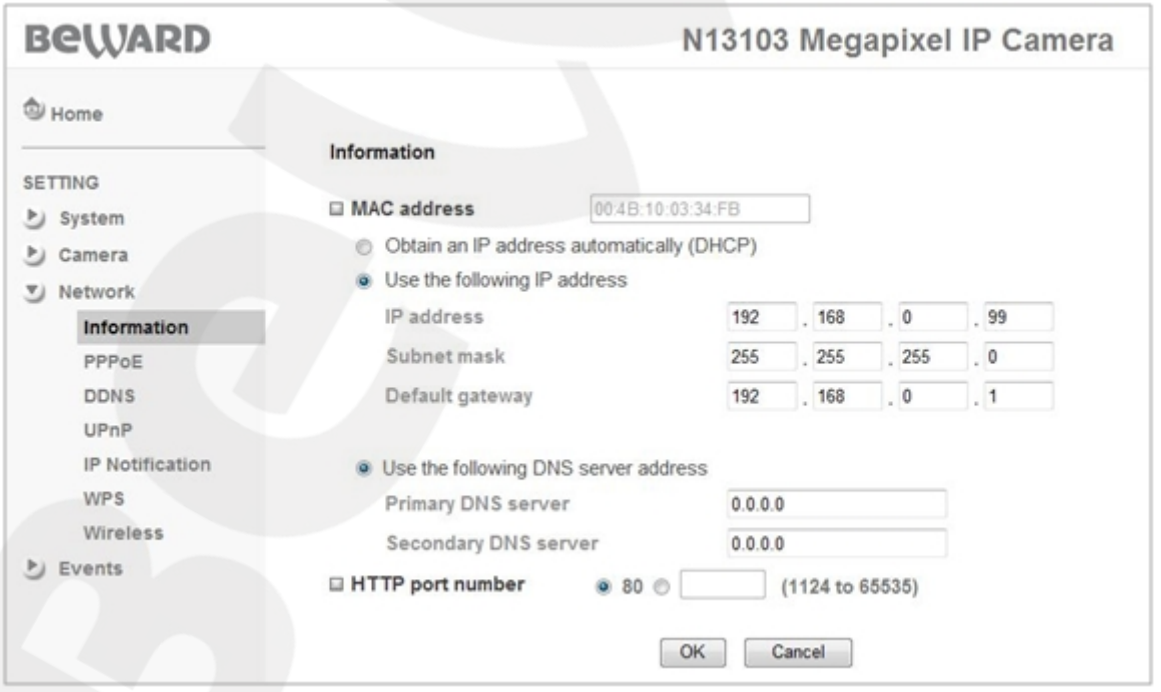
Chapter 8. SETTING: Network

The **[Network]** menu contains the following sections: **[Information]**, **[PPPoE]**, **[DDNS]**, **[UPnP]**, **[IP Notification]**, **[WPS]**, and **[Wireless]** (*Pic. 8.1*). Each of these sections is discussed later in this Manual.

Pic. 8.1

8.1. Information

This menu allows you to configure the network connection (*Pic. 8.2*).



Pic. 8.2

MAC address: displays the current MAC address. This parameter cannot be changed and is provided for informational purposes only.

Obtain an IP address automatically (DHCP): select this option to obtain an IP address automatically from a DHCP server on your network. When this option is selected, the **[Obtain DNS server address automatically]** option is available, which allows a DNS address to be automatically obtained.

NOTE:
The **[Obtain DNS server address automatically]** option is available only when the **[Obtain an IP address automatically (DHCP)]** option is selected.

Use the following IP address: select this option to type the IP address manually. The following items are available:

- **IP address**: type the IP address. The default IP address is 192.168.0.99.
- **Subnet mask**: type the subnet mask. The default value is 255.255.255.0.
- **Default gateway**: type the gateway IP address. The default value is 192.168.0.1.

Use the following DNS server address: select this option to type DNS servers' addresses manually. This option is available when the option for static IP address is used as well as when it is obtained automatically from a DHCP server.

- **Primary DNS server**: type the primary DNS server IP address.
- **Secondary DNS server**: type the secondary DNS server IP address.

HTTP port number: the default value is 80. You can set the value of the port between the values of 1124 and 65535.

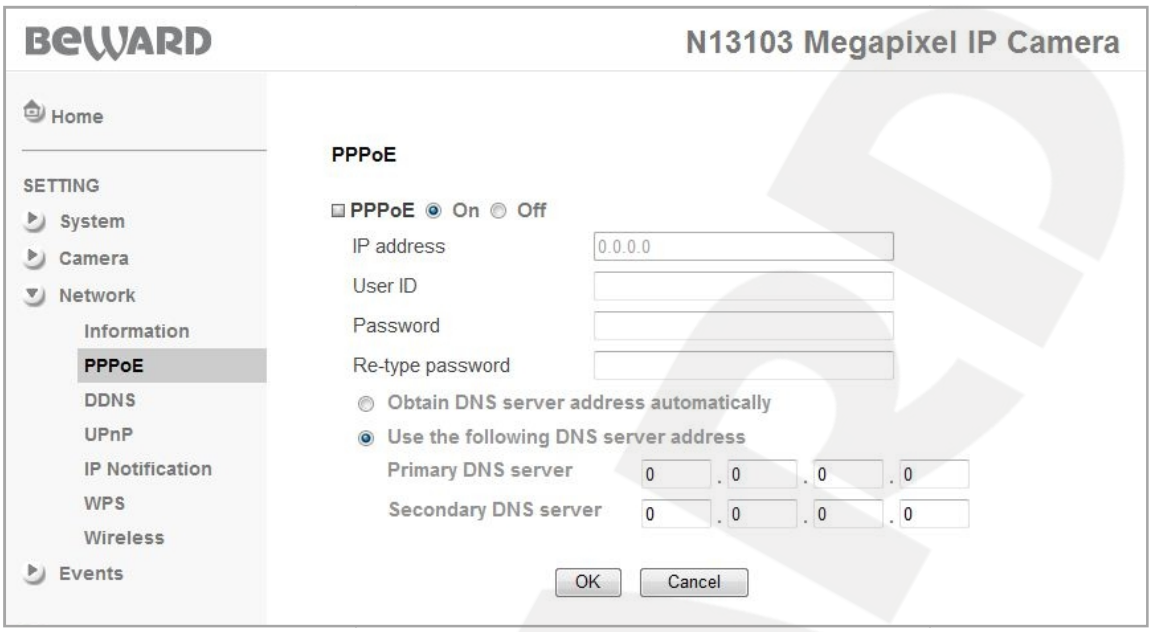
NOTE:
If you use the HTTP port number other than 80, you need to type both your camera IP address and HTTP port number. For example, if your camera's address is 192.168.1.100 and its HTTP port is 8081, you need to type http://192.168.1.100:8081 in your browser's address bar to access the camera.

IMPORTANT:
You must restart the camera for the changes to take effect. To do so, go to ***SETTING – System – Initialize.***

8.2. PPPoE (Point-to-Point Protocol over Ethernet)

This section allows you to configure the PPPoE connection. It can be used to connect the camera to the Internet when the Internet service provider assigns it a dynamic IP address and username and password PPPoE authentication is used.

To enable PPPoE feature, select the option for **[On]**. It also will make PPPoE options available (*Pic. 8.3*).



Pic. 8.3

IP address: IP address from PPPoE server (assigned by server).

User ID: type a username for PPPoE connection. The maximum length is 64 characters (assigned by your Internet service provider or PPPoE provider).

Password: type a password for PPPoE connection. The maximum length is 32 (assigned by your Internet service provider or PPPoE provider).

Re-type password: re-type the entered password to avoid mistakes in password assignment.

Obtain DNS server address automatically: select this option to obtain a DNS address automatically.

Use the following DNS server address: select this option to type DNS servers' addresses manually.

- **Primary DNS server**: type the primary DNS server IP address.
- **Secondary DNS server**: type the secondary DNS server IP address.

IMPORTANT:

You must restart the camera for the changes to take effect. To do so, go to ***SETTING – System – Initialize.***

IMPORTANT:

After a PPPoE connection is established, the IP address you specified in ***SETTING – Network – Information*** is unavailable and you need to type the IP address assigned by PPPoE server to access the camera (***SETTING – Network – PPPoE***).

Use the option for **[IP notification]** to check the IP address assigned after PPPoE connection is established (see paragraph 8.5. for details).

8.3. DDNS (Dynamic DNS)

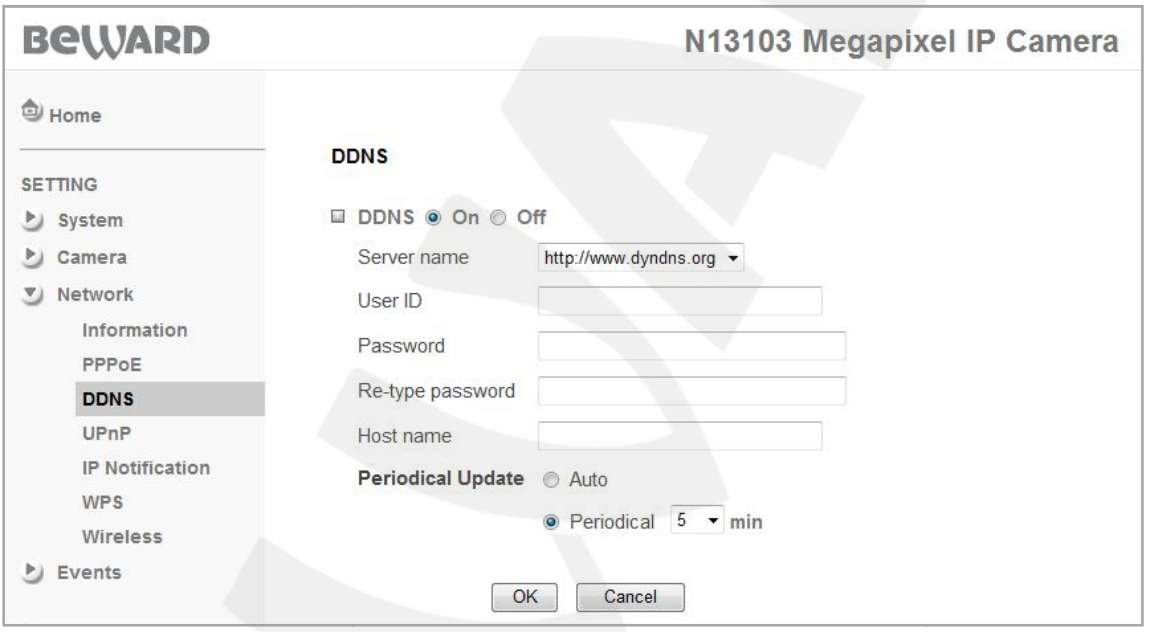
This menu allows you to configure the DDNS connection. This feature allows the IP camera to be easily accessible over the Internet even if you use a public dynamic IP address.

The IP address is linked with a domain name. So, if your current IP address changes, it automatically links to your domain name, which you can use any time to access your IP camera over the Internet. Therefore, the camera must be assigned with a public dynamic IP address.

To use DDNS, select the option for **[On]** to enable it (*Pic. 8.4*).

IMPORTANT:

To use the DDNS feature, your IP camera must be connected to the Internet directly or through a router.



Pic. 8.4

Server name: select a DDNS provider.

User ID: type a username obtained during the registration at the DDNS provider website.

Password: type a password obtained during the registration at the DDNS provider website.

Re-type password: re-type the entered password to avoid mistakes in password assignment.

Host name: type a host name obtained during the registration at the DDNS provider website.

IMPORTANT:

You must restart the camera for the changes to take effect. To do so, go to ***SETTING – System – Initialize.***

8.4. UPnP (Universal Plug and Play)

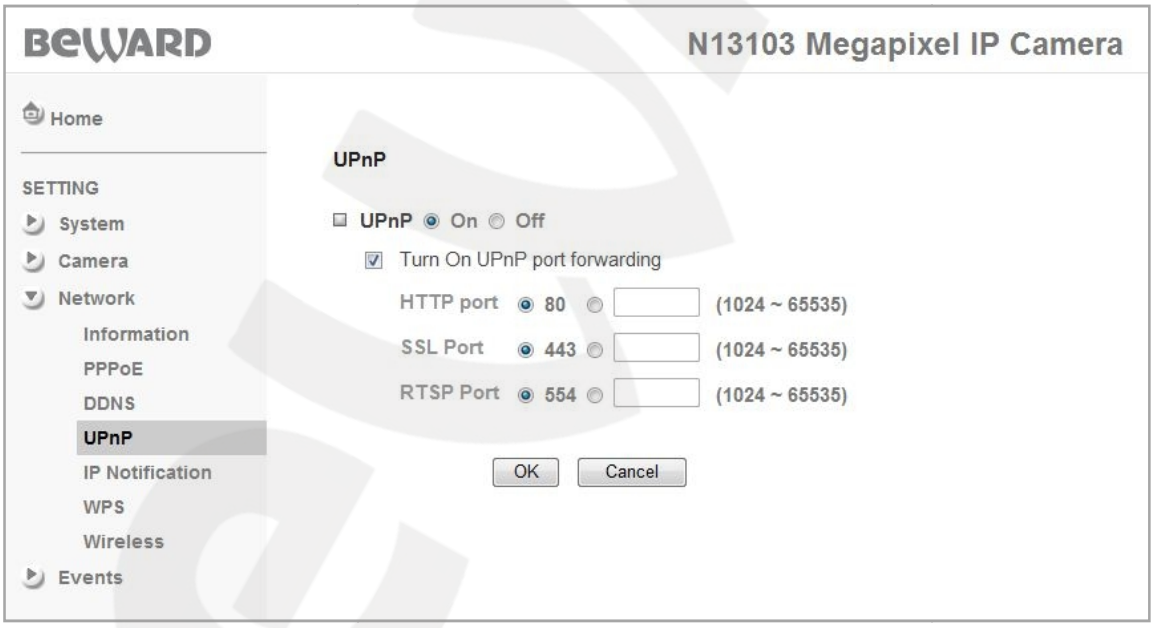
If your camera is connected to the Internet through a router, you need to use a router with UPnP support to automatically forward the ports. You also need to enable the option for UPnP on your IP camera and router and adjust their settings (*Pic. 8.5*).

NOTE:
To use UPnP, your network router must support it.

HTTP port: type your camera HTTP port to access it over the Internet. For example, the value of the port you assigned is 10000. In this case, port 80 is used to access the camera over a local network and port 10000 is used to access the camera over the Internet. The default value is 80.

SSL port: type the SSL port number to access the camera through a secure connection HTTPS over the Internet. The default value is 443.

RTSP port: type the RTSP port number to access the camera over the Internet. The default value is 554.



Pic. 8.5

NOTE:
Please refer to the user manual to enable and configure the option for UPnP on your router.

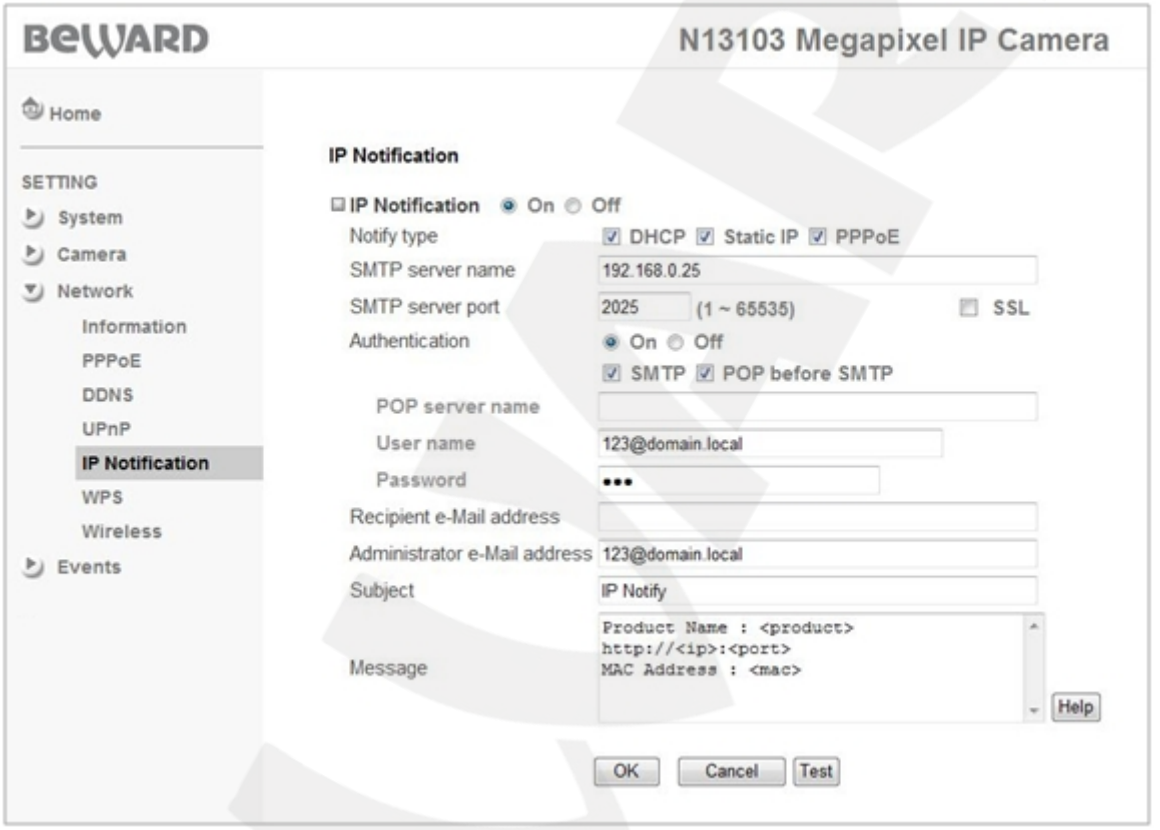
IMPORTANT:
Some routers do not support UPnP to forward LAN and WAN ports. Make sure your router supports this option.

IMPORTANT:

You must restart the camera for the changes to take effect. To do so, go to ***SETTING – System – Initialize.***

8.5. IP notification

This section allows you to configure your camera so that it will send e-mails after network settings were changed (*Pic. 8.6*).



Pic. 8.6

Select the option for **[On]** and click **OK** to enable this function. After you save the changes, the following settings will be available:

Notify type: select a connection type if you want to be notified when it is changed: **[DHCP]**, **[Static IP]**, or **[PPPoE]**.

If any of these types is selected, a message containing data from the **[Message]** field will be sent to the specified e-mail address.

SMTP server name: type the SMTP server IP address or name (64 characters maximum).

SMTP server port: type the SMTP server port number. The default value is 25.

SSL: check this box if the provider requires SSL communications.

Authentication: select an authentication type to send e-mails.

- **Off**: no authentication is required.
- **On**: authentication is required. You can select **[SMTP]** or **[POP before SMTP]**.

POP server name: this item is displayed when the **[POP before SMTP]** option is selected. The POP server name is used for authorization (64 characters maximum).

User name: type a username to access the mail server (64 characters maximum).

Password: type a password to access the mail server (64 characters maximum).

Recipient e-mail address: type the receiver's e-mail address (64 characters maximum). You can type up to 3 e-mail addresses separating them by using a semicolon **[;]**.

Administrator e-mail address: type the sender's e-mail address (64 characters maximum).

Subject: type the e-mail subject (64 characters maximum) into this box.

Message: type the e-mail text in this box (384 characters maximum).

By default, the e-mail contents the following information: the IP address <ip>, the port <port>, the MAC address <mac>, the camera model <product>, the firmware version <vfirm>, and the web interface version <vweb>.

8.6. WPS

This menu provides aided setting up of Wi-Fi connection with the use of WPS (Wi-Fi Protected Setup) technology (*Picture 8.7*). After this option is configured, you can use both wireless and wired connection.

NOTE:
If this option is enabled, it is possible to access the camera without wired connection. To do so, press the WPS button on the device to which you want connect the camera and press the WPS button on the camera. After that, the wireless connection between the camera and the device will be established within 2 minutes.

Pic. 8.7

WPS: select the option for **[On]** to enable WPS or select the option for **[Off]** to disable it. The field below displays a list of discovered wireless devices that support WPS technology. To refresh the list, click the **[Refresh]** button.

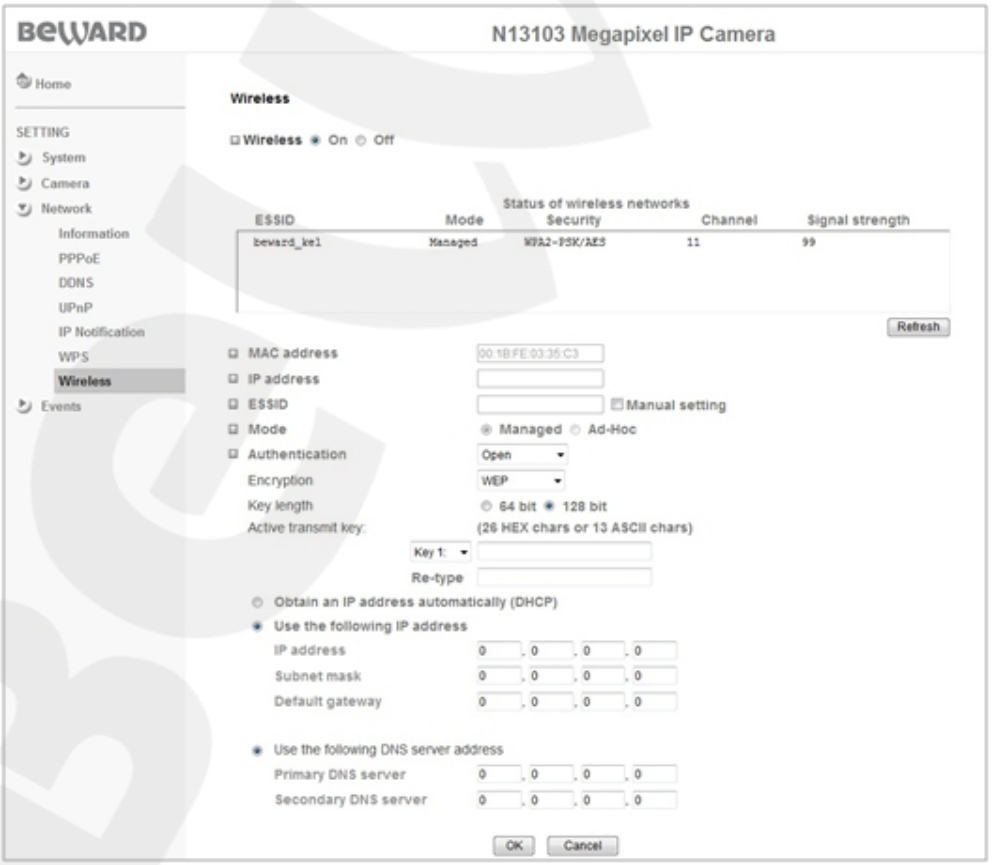
Configure via: this item allows user to choose how to configure wireless connection with the use of WPS. The following options are available:

- **PBC**: if this option is selected, the connection will be configured by pushing the WPS button on the device. Select the option for **[PBC]** and click the **[Start]** button. After 2 minutes, push the WPS button on the wireless device to which you want to connect.
- **PIN**: if this option is selected, you will have to enter PIN on the device to which you want to connect. Click the **[Generate new PIN]** button to generate a PIN, which will be displayed in the field next to this button. To generate another PIN, repeatedly click the **[Generate new PIN]** button.

  Click **[OK]** to save changes or click **[Cancel]** to cancel changes.

8.7. Wi-Fi

This section allows you to configure Wi-Fi connection with any device that supports Wi-Fi option even if it does not support WPS technology (*Pic. 8.8*). After Wi-Fi is configured, you can use both wireless and wired connection.



Pic. 8.8

Wireless: allows you to turn on or off Wi-Fi module

Status of wireless networks: this field displays a list of available wireless networks. A network, the camera is connected to, is highlighted in blue. The following information is provided:

- **ESSID**: shows wireless network name (or Ad Hoc device). It indicates a wireless network the camera is connecting to.
- **Mode**: shows network mode (access point or Ad Hoc).
- **Security**: shows used security protocol. Supported security protocols are discussed below in this Manual.
- **Channel**: shows a network channel.
- **Signal strength**: shows network signal strength (100 means maximum signal strength).

[Refresh]: allows updating list of available wireless networks.

Double-click a wireless network to connect to it.

MAC address: shows camera MAC address.

IP address: allows you to set wireless network device IP address.

NOTE:

There are two ways to connect to a wireless network: manual and automatic (DHCP). When the camera is automatically assigned with an IP address (DHCP), the **[IP address]** field displays current IP address assigned over DHCP.

Manual setting: check this box to assign **[ESSID]** value manually.

Mode: shows camera Wi-Fi module mode (“Managed” or “Ad Hoc”).

When the **“Managed”** mode is used, the wireless network has at least one access point, which is connected to a wired network, and several wireless stations. Such a configuration is called Basic Service Set, BSS. In this situation the camera is used as a wireless station (client).

When the **“Ad Hoc”** mode is used, each device or station can connect each other without using an access point (AP). Ad Hoc mode is also known as peer-to-peer mode. It allows establishing a small local network (5 hosts maximum) without using additional access points. This mode is convenient when using an IP camera together with a laptop as generally laptop adapters do not support an access point mode.

Authentication: allows you to select an authentication mode when connecting wireless devices. The following modes are available: Open, Shared key, WPA-PSK, and WPA2-PSK.

Encryption: allows you to select data encryption mode.

Obtain an IP address automatically (DHCP): when this option is selected, an IP address is automatically obtained from a DHCP server on your network.

Use the following IP address: select this option to configure IP address manually. You need to type the following information:

- **IP address**: type a device IP address.
- **Subnet mask**: type a subnet mask.
- **Default gateway**: type a default gateway IP address.

Obtain DNS server address automatically: select this option to obtain a DNS server address automatically.

Use the following DNS server address: select this option to configure DNS server address manually.

- **Primary DNS server**: type a primary DNS server address.
- **Secondary DNS server**: if required, type a secondary DNS server address.

IMPORTANT:
After saving Wi-Fi parameters, camera automatically disables wired interface and user can access only wireless interface.

NOTE:
Click **[OK]** to save changes. Otherwise, the changes may not be saved.

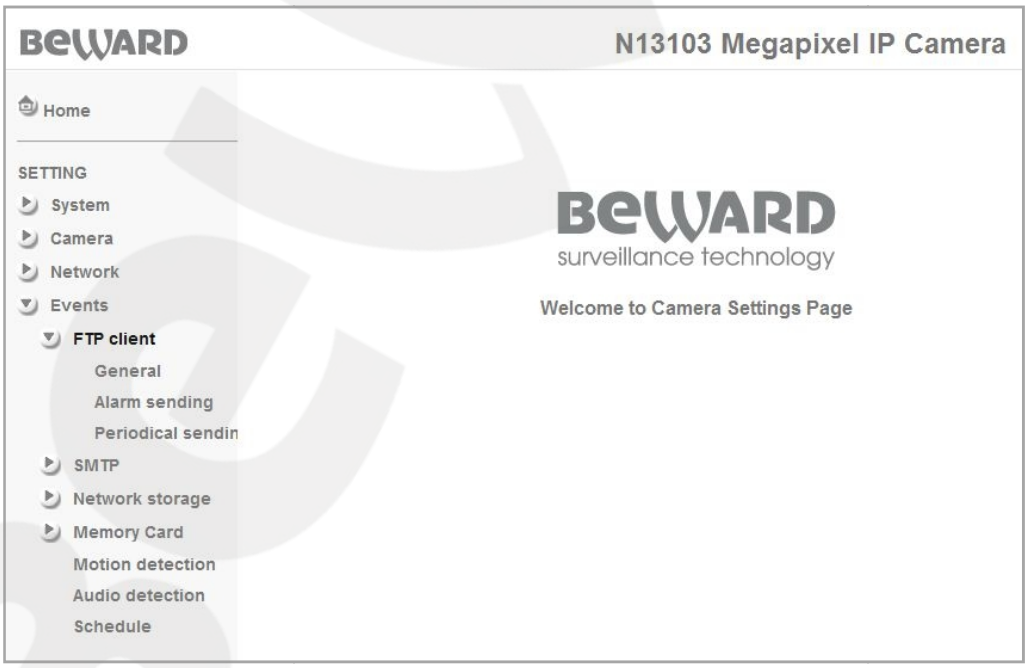
Chapter 9. SETTING: Events

This menu contains the following sections: **[FTP client]**, **[SMTP]**, **[Network storage]**, **[Memory card]**, **[Motion detection]**, **[Audio detection]**, and **[Schedule]** (*Pic. 9.1*).

Pic. 9.1

9.1. FTP Client

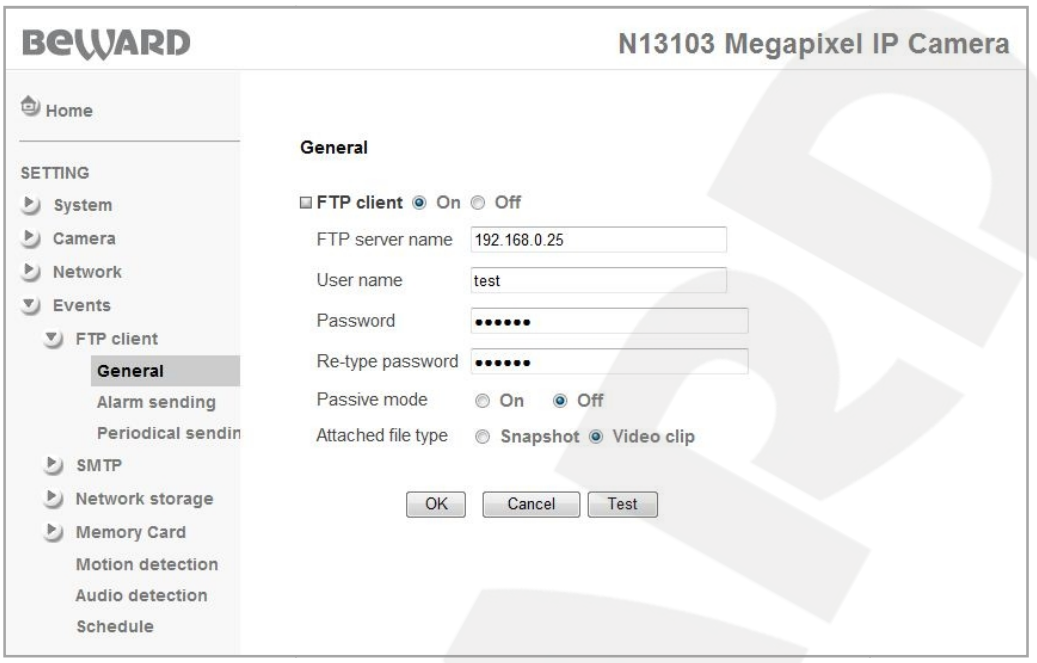
This menu allows you to configure file transfer to FTP server. When this option is enabled, it allows you to select a scheduled, periodical or alarm triggered file transfer to FTP *(Pic.9.2*).



Pic.9.2

9.1.1. General

This section allows you to configure the FTP client (*Pic. 9.3*).



Pic. 9.3

Select the option for **[On]** to enable the FTP client or the option for **[Off]** to disable it.

FTP server name: type the FTP server IP address or name (64 characters maximum).

User name: type a username to access the FTP server.

Password: type a password to access the FTP server.

Re-type password: re-type the entered password to avoid mistakes in password assignment.

Passive mode: select the option for **[On]** to use a passive mode or select the option for **[Off]** to use an active mode.

Attached file type: select a file type you want to transfer to the FTP. The following options are available:

- **Snapshot**: select this option to transfer JPEG images to the FTP.
- **Video clip**: select this option to transfer AVI video to the FTP.

IMPORTANT:

To playback recorded video, use the integrated player at ***SETTING – Camera – Playback***, otherwise you may need to install third party software, e.g. VLC media player. Its official website is http://www.videolan.org/vlc/.

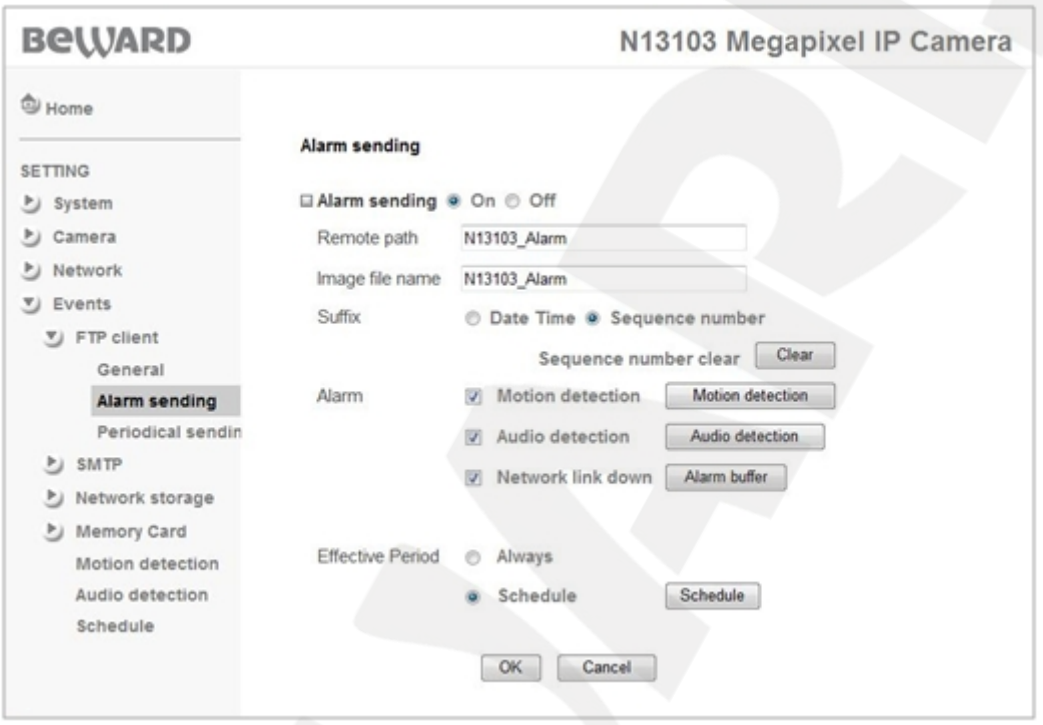
[Test]: click this button to check the server availability, file transfer parameters and transfer a test file.

NOTE:

Click **[OK]** to save changes. Otherwise, the changes may not be saved.

9.1.2. Alarm Sending

This menu allows you to specify alarm triggered file transfer to FTP. Select the option for **[On]** to enable this option (*Pic. 9.4*).



Pic. 9.4

Remote path: specify the path on the FTP server (64 characters maximum) to save transferred files. For example, ipcam/example.

Image file name: type a name for the files transferred to the FTP.

NOTE:
Image file name may contain only Latin letters, reserved characters and numbers with no spaces in its name.

Suffix: select a suffix to add it to the file name. The following options are available:

- **Date Time**: adds the date and time that correspond to the date and time the file was created. This suffix contains the year as 4 digits, the month as 2 digits, the day as 2 digits, the hour as 2 digits, the minute as 2 digits, the second as 2 digits. Totally, this adds a fourteen-digit suffix to the file name.
- **Sequence number**: adds a six-digit number. User can click the **[Clear]** button to reset the sequence number anytime. When user clicks the **[Clear]** button it resets the sequence number and starts it from 000001.

Alarm: allows you to select an event that triggers file transfer to FTP:

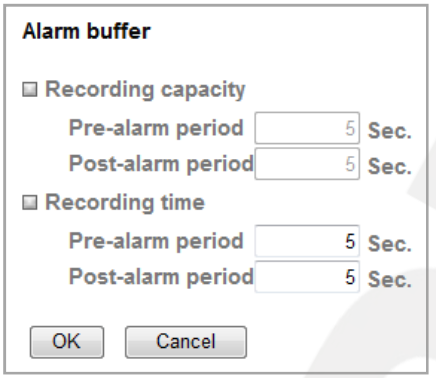
- **Motion detection**: enables motion detection triggered file transfer. To configure this option, click the **[Motion detection]** button (appears if the **[Motion detection]** box is checked) or go to ***SETTING – Events – Motion detection***. See paragraph 9.5 for details.
- **Audio detection**: enables audio detection triggered file transfer to FTP. To configure this option, click the **[Audio detection]** button or go to ***SETTING – Events – Audio detection***. See paragraph 9.6 for details.

IMPORTANT:
When motion or audio detection triggers, camera sends video files with an interval of 2-4 seconds. The video files length is 5 seconds, however the file size is 2 MB maximum. When sending event triggered images, the camera sends 3 images of the pre-alarm period, 3 images of the post-alarm period and 1 image of the event itself for each event. Generally camera sends pre- and post alarm images with an interval of 1 image per every 1-2 seconds.

- **Network link down**: when this option is enabled, the camera transfers files to FTP when a network error occurs. When the connection is lost, the camera sends the records made before and after the connection lost to the temporary buffer. After the connection is up, the camera resumes file transfer to FTP. To configure the alarm buffer option, click the **[Alarm buffer]** (appears if the **[Network link down]** box is checked) button. (*Pic. 9.5*).

NOTE:
Duration of sent video files is 5 seconds, however the file size is 2 MB maximum. Therefore video file duration may be less than 5 seconds even if user specifies the value of 5 seconds in the **[Alarm buffer]** menu.

IMPORTANT:
When you configuring this menu, be aware that these parameters are applied to the other camera functions, for example to recording to network storage, FTP, etc.



Pic. 9.5

Recording capacity: shows maximum record time for the corresponding events and is provided for informational purposes only.

- **Pre-alarm period**: maximum record time before the connection is down.
- **Post-alarm period**: maximum record time after the connection is down.

Recording time: allows you to set a record time for the corresponding events.

- **Pre-alarm period**: record time before the connection is down.
- **Post-alarm period**: record time after the connection is down.

IMPORTANT:
When motion detection is triggered, the camera sends files recorded before and after the connection was down (record length is specified in **"pre-alarm period"** and **"post-alarm period"** menu).

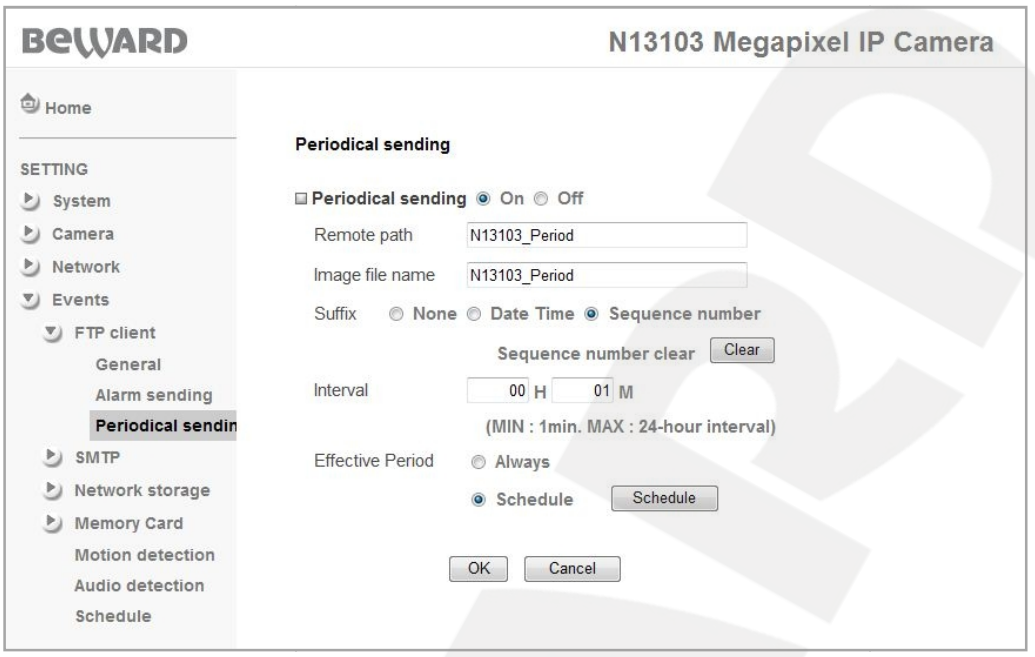
Effective period: allows you to set a period for uploading files to FTP. The following options are available:

- **Always**: select this option for continuous uploading of files.
- **Schedule**: select this option for scheduled uploading of files. To configure this option, click the **[Schedule]** button or go to ***SETTING – Events – Schedule***. See paragraph 9.7 for detailed information.

NOTE:
Click **[OK]** to save changes. Otherwise, the changes may not be saved.

9.1.3. Periodical Sending

This section allows you to configure schedule to upload files to FTP. Select the option for **[On]** to enable this option (*Pic. 9.6*).



Pic. 9.6

Remote path: specify the path on the FTP server (64 characters maximum) to save transferred files. For example, ipcam/example.

Image file name: type a name for the files transferred to the FTP.

NOTE:
Image file name may contain only Latin letters, reserved characters and numbers with no spaces in its name.

Suffix: select a suffix to add it to the file name. The following options are available:

- **None**: do not add any suffix to the file name. An old file will be overwritten by a new one when the camera uploads it to the FTP.
- **Date Time**: adds the date and time that correspond to the date and time the file was created. This suffix contains the year as 4 digits, the month as 2 digits, the day as 2 digits, the hour as 2 digits, the minute as 2 digits, the second as 2 digits. Totally, this adds a fourteen-digit suffix to the file name.
- **Sequence number**: adds a six-digit number. User can click the **[Clear]** button to reset the sequence number anytime. When user clicks the **[Clear]** button it resets the sequence number and starts it from 000001.

Interval: allows you to set a frequency of alarm triggered uploading files. The minimum value is 1 minute; the maximum value is 24 hours.

IMPORTANT:
Duration of sent video files is 5 seconds. When image file is selected, the camera sends 1 image.

Effective period: allows you to set a period for uploading files to FTP. The following options are available:

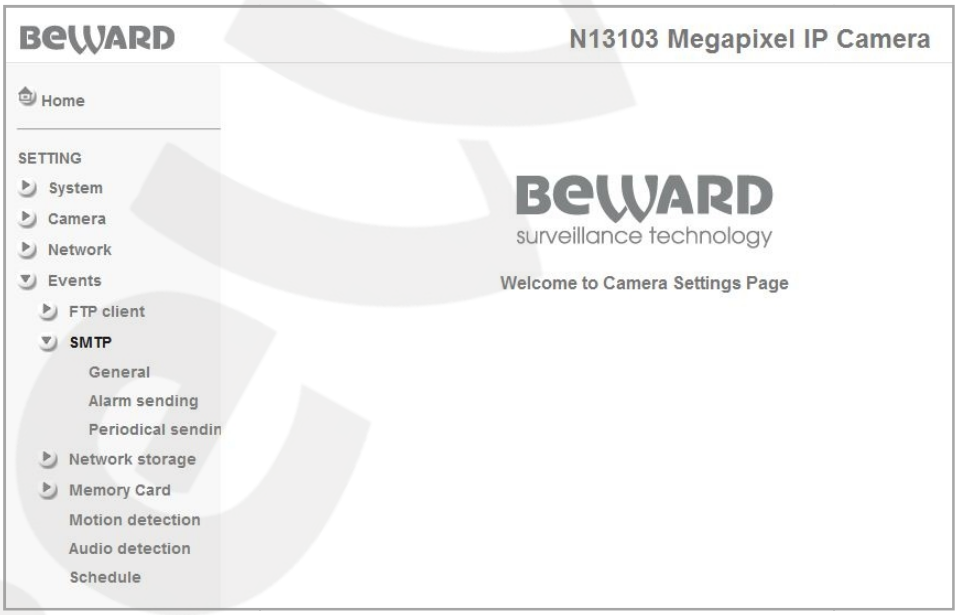
- **Always**: select this option for continuous uploading of files.
- **Schedule**: select this option for scheduled uploading of files. To configure this option, click the **[Schedule]** button or go to ***SETTING – Events – Schedule***. See paragraph 9.7 for details.

IMPORTANT:
If the camera has been recording by alarm when the scheduled recording starts, the scheduled recording and uploading of files will be performed in the next interval specified in the **[Interval]** item.

NOTE:
Click **[OK]** to save changes. Otherwise, the changes may not be saved.

9.2. SMTP

This menu allows you to configure e-mail sending. You can attach an image or video to an e-mail. You can specify a scheduled or alarm triggered sending of e-mails. The menu contains the following sections: **[General]**, **[Alarm sending]**, and **[Periodical sending]** (*Pic. 9.7*).



Pic. 9.7

9.2.1. General

Select the option for **[On]** to enable e-mail sending or select the option for **[Off]** to disable it (*Pic. 9.8*).

Pic. 9.8

SMTP server name: type the SMTP server IP address or name (64 characters maximum).

SMTP server port: type the SMTP server port number. The default value is 25.

SSL: check this box if the provider requires SSL communications.

Authentication: select an authentication type to send e-mails.

- **Off**: no authentication is required.
- **On**: authentication is required. You can select **[SMTP]** or **[POP before SMTP]**.

POP server name: this item is displayed when the **[POP before SMTP]** option is selected. The POP server name is used for authorization (64 characters maximum).

User name: type a username to access the mail server (64 characters maximum).

Password: type a password to access the mail server (64 characters maximum).

Recipient e-mail address: type the receiver's e-mail address (64 characters maximum). You can type up several e-mail addresses separating them by using a semicolon **[;]**.

Administrator e-mail address: type the sender's e-mail address (64 characters maximum).

Attached file type: select a file type you want to transfer via e-mail. The following options are available:

- **Snapshot**: select this option to transfer JPEG images via e-mail.
- **Video clip**: select this option to transfer AVI video via e-mail.

IMPORTANT:

Duration of sent video files is 5 seconds. When image file is selected, the camera sends 1 image.

IMPORTANT:

To playback recorded video, use the integrated player at ***SETTING – Camera – Playback***, otherwise you may need to install third party software, e.g. VLC media player. Its official website is http://www.videolan.org/vlc/.

Subject: type the e-mail subject (64 characters maximum) into this box.

IMPORTANT:

The subject may contain only Latin letters and numbers.

Message: type the e-mail text in this box (384 characters maximum).

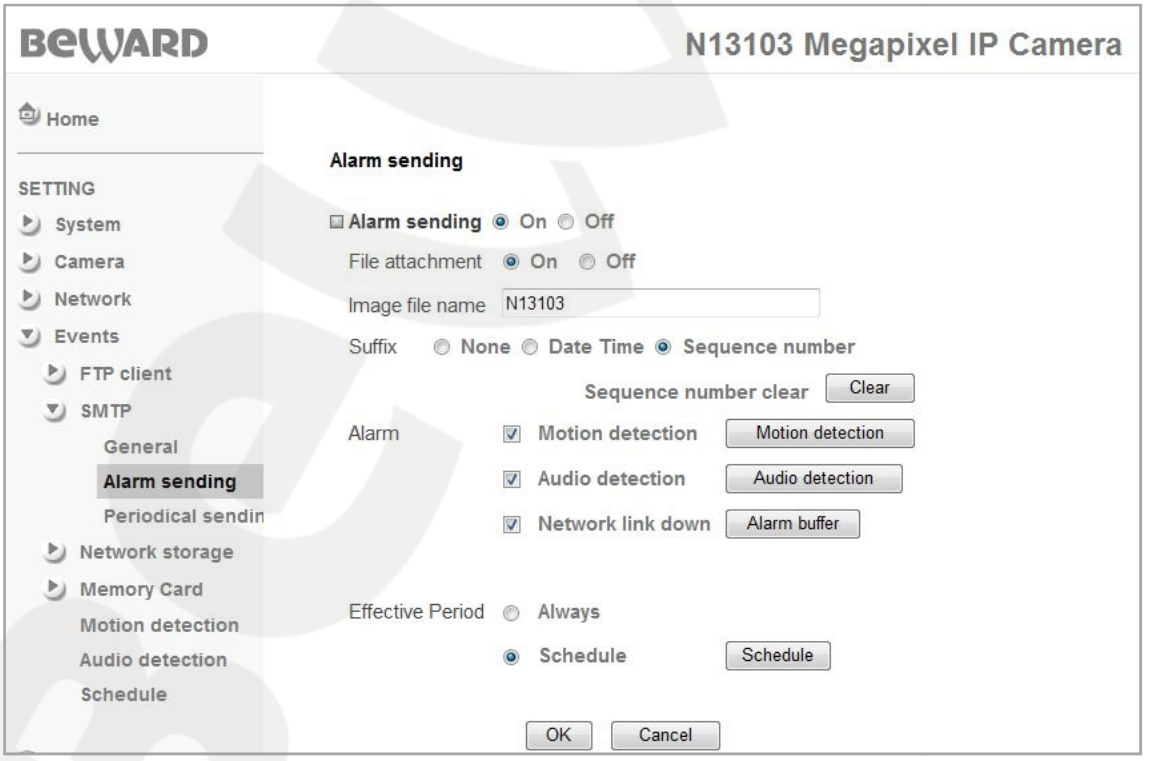
[Test]: click this button to check the entered parameters and send a test e-mail.

NOTE:

Click **[OK]** to save changes. Otherwise, the changes may not be saved.

9.2.2. Alarm Sending

This section allows you to configure e-mail notification when an alarm is triggered. Select the option for **[On]** to enable this option (*Pic. 9.9*).



Pic. 9.9

File attachment: select the option for **[On]** to attach a file to the e-mail.

NOTE:
Go to ***SETTING – Events – SMTP – General*** to select attached file type.

Image file name: type a name for the files attached to the e-mails.

NOTE:
Image file name may contain only Latin letters, reserved characters and numbers with no spaces in its name.

Suffix: select a suffix to add it to the file name. The following options are available:

- **None**: do not add any suffix to the file name.
- **Date Time**: adds the date and time that correspond to the date and time the file was created. This suffix contains the year as 4 digits, the month as 2 digits, the day as 2 digits, the hour as 2 digits, the minute as 2 digits, the second as 2 digits. Totally, this adds a fourteen-digit suffix to the file name.
- **Sequence number**: adds a six-digit number. User can click the **[Clear]** button to reset the sequence number anytime. When user clicks the **[Clear]** button it resets the sequence number and starts it from 000001.

Alarm: allows you to select an event triggered e-mail notification:

- **Motion detection**: the camera sends you an e-mail when motion detection is triggered. To configure this option, click the **[Motion detection]** button (appears if the **[Motion detection]** box is checked) or go to ***SETTING – Events – Motion detection***. See paragraph 9.5 for details.
- **Audio detection**: enables audio detection triggered e-mail alert. To configure this option, click the **[Audio detection]** button (appears if the **[Audio detection]** box is checked) or go to ***SETTING – Events – Audio detection***. See paragraph 9.6 for details.

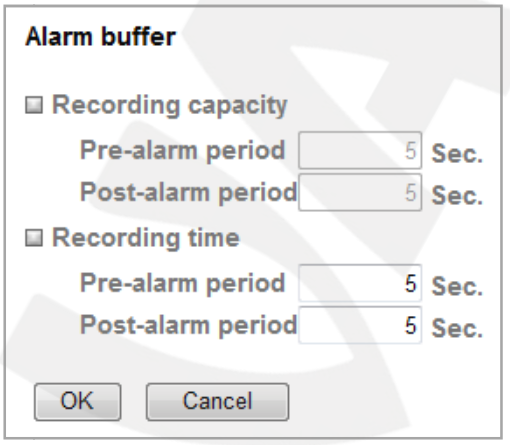
IMPORTANT:
When motion or audio detection triggers, camera sends video files with an interval of 2-4 seconds. The video files length is 5 seconds, however the file size is 2 MB maximum. When sending event triggered images, the camera sends 3 images of the pre-alarm period, 3 images of the post-alarm period and 1 image of the event itself for each event. Generally camera sends pre- and post alarm images with an interval of 1 image per every 1-2 seconds.

- **Network link down**: when this option is enabled, the camera sends you an e-mail when a network error occurs. When the connection is lost, the camera sends the records made before and after the connection lost to the temporary buffer. After the connection

is up, the camera sends the files to an e-mail. To configure the alarm buffer option, click the **[Alarm buffer]** button (appears if the **[Network link down]** box is checked) (*Pic. 9.10*).

NOTE:
Duration of sent video files is 5 seconds, however the file size is 2 MB maximum. Therefore video file duration may be less than 5 seconds even if user specifies the value of 5 seconds in the **[Alarm buffer]** menu.

IMPORTANT:
When you configuring this menu, be aware that these parameters are applied to the other camera functions, for example to recording to network storage, FTP, etc.



Pic. 9.10

Recording capacity: shows maximum record time for the corresponding events and is provided for informational purposes only.

- **Pre-alarm period**: maximum record time before the connection is down.
- **Post-alarm period**: maximum record time after the connection is down.

Recording time: allows you to set a record time for the corresponding events.

- **Pre-alarm period**: record time before the connection is down.
- **Post-alarm period**: record time after the connection is down.

IMPORTANT:
When motion detection is triggered, the camera sends files recorded before and after the connection was down (record length is specified in **"pre-alarm period"** and **"post-alarm period"** menu).

Effective period: allows you to set a period for sending e-mails when an alarm is triggered. The following options are available:

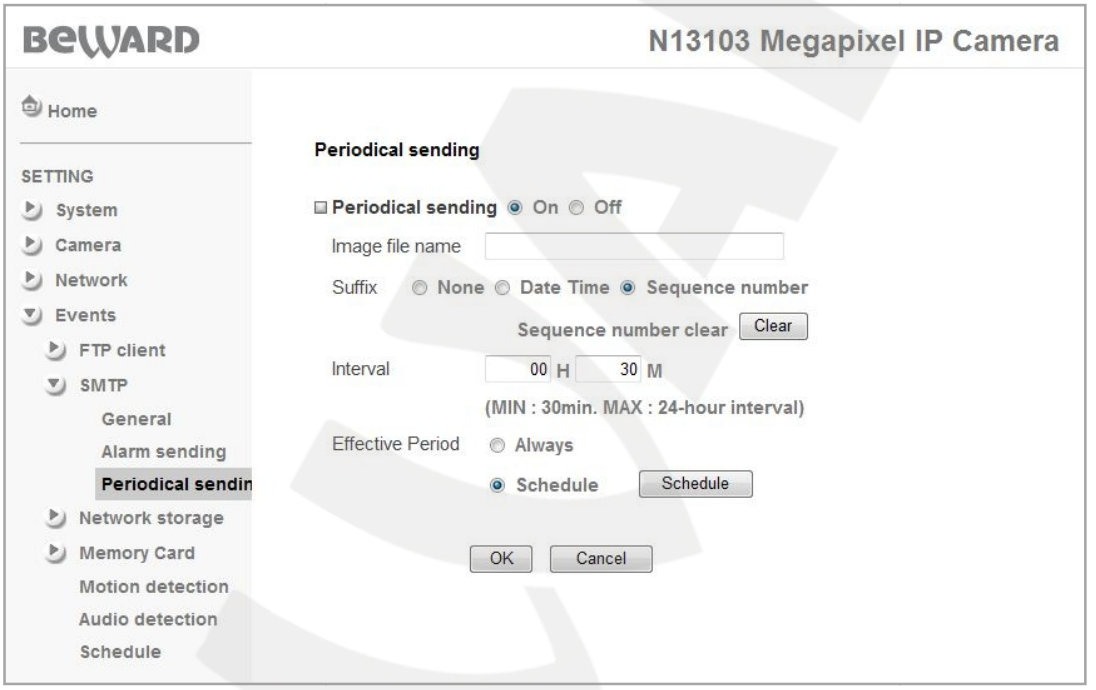
- **Always**: select this option for continuous e-mail sending.

- **Schedule**: select this option for scheduled e-mail sending. To configure this option, click the **[Schedule]** button or go to ***SETTING – Events – Schedule***. See paragraph 9.7 for details.

NOTE:
Click **[OK]** to save changes. Otherwise, the changes may not be saved.

9.2.3. Periodical Sending

This section allows you to specify e-mail notification intervals. Select the option for **[On]** to enable this feature (*Pic. 9.11*).



Pic. 9.11

Image file name: type a name for the files attached to the e-mails.

NOTE:
Image file name may contain only Latin letters, reserved characters and numbers with no spaces in its name.

Suffix: select a suffix to add it to the file name. The following options are available:

- **None**: do not add any suffix to the file name.
- **Date Time**: adds the date and time that correspond to the date and time the file was created. This suffix contains the year as 4 digits, the month as 2 digits, the day as 2 digits, the hour as 2 digits, the minute as 2 digits, the second as 2 digits. Totally, this adds a fourteen-digit suffix to the file name.

- **Sequence number**: adds a six-digit number. User can click the **[Clear]** button to reset the sequence number anytime. When user clicks the **[Clear]** button it resets the sequence number and starts it from 000001.

Interval: allows you to set a frequency of e-mail sending. The minimum value is 30 minutes; the maximum value is 24 hours.

IMPORTANT:
Duration of sent video files is 5 seconds.

Effective period: allows you to set a period for sending e-mails when an alarm is triggered. The following options are available:

- **Always**: select this option for continuous e-mail sending.
- **Schedule**: select this option for scheduled e-mail sending. To configure this option, click the **[Schedule]** button or go to ***SETTING – Events – Schedule***. See paragraph 9.7 for details.

IMPORTANT:
If camera is recording to FTP and sending an e-mail at one time, it may skip sending e-mail as the priority of recording to FTP is higher.

NOTE:
Click **[OK]** to save changes. Otherwise, the changes may not be saved.

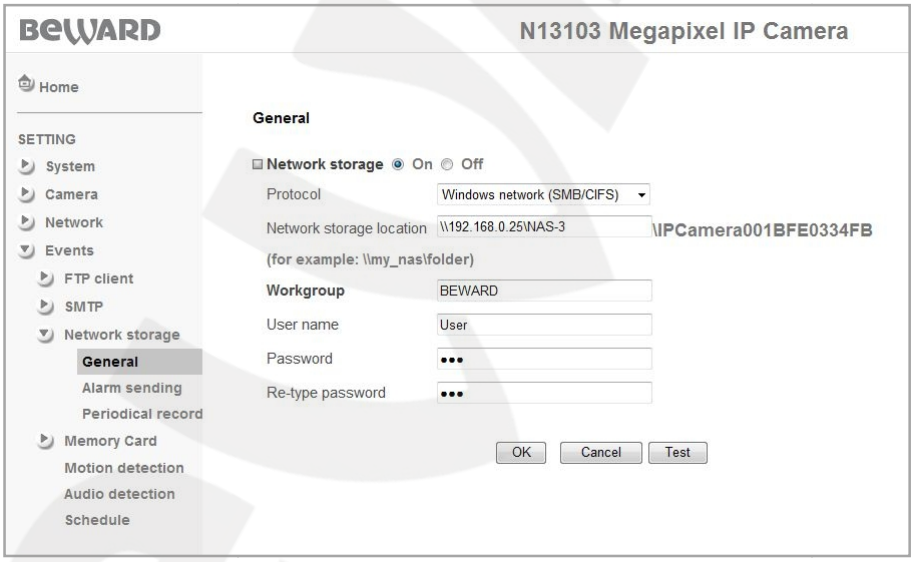
9.3. Network storage

This menu allows you to configure recording to network attached storage (NAS) or to network shared folder. When this function is enabled, the camera can record files continuously, with a certain time interval or when an event occurs. This menu contains the following sections: **[General]**, **[Alarm sending]**, **[Periodical sending]** (*Pic. 9.12*).

Pic. 9.12

9.3.1. General

Select the option for **[On]** to enable the option for recording to network attached storage or select the option for **[Off]** to disable it (*Pic. 9.13*).



Pic. 9.13

Protocol: select a protocol to access the network attached storage.

- **Windows network (SMB/CIFS)**: select this option for a Windows-based network storage. For example, if the camera records to a Windows network shared folder.
- **Unix network (NFS)**: select this option for a Unix-based network shared folder (e.g. Linux OS).

Network storage location: specify the shared folder location. The camera creates a new folder named «IPCamera <MAC address>».

NOTE:
When specifying Windows-based network storage location, note that the path should be in the form of \\NAS_server\Record; for Unix-based network storage, the path should be in the form of NAS_Server:\Record, where NAS_Server means the network storage or the shared folder IP address.

When using Windows-based network storage, it is necessary to specify the following parameters as well:

Workgroup: enter Windows workgroup name. This name should match the workgroup name of the computer with a shared folder or NAS server.

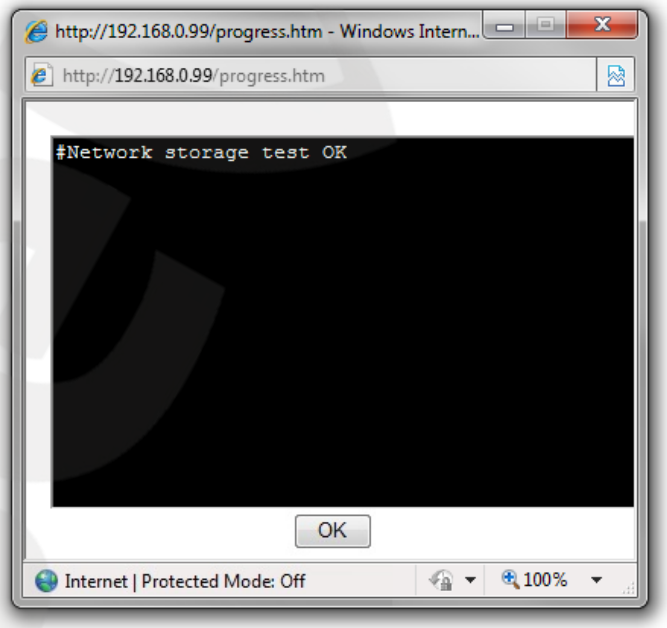
User name: type an authorization user name you need to enter to access a remote computer (or NAS server).

Password: type a password you need to enter to access a remote computer (or NAS server).

Re-type password: re-type the entered password to avoid mistakes in password assignment.

NOTE:
Make sure you have the permissions to create new folders and files.

After you entered all the required information, click the **[Test]** button to check the NAS parameters. If the NAS function is configured correctly and the network storage is available, you will see a confirmation of successful test completion (*Pic. 9.14*).



Pic. 9.14

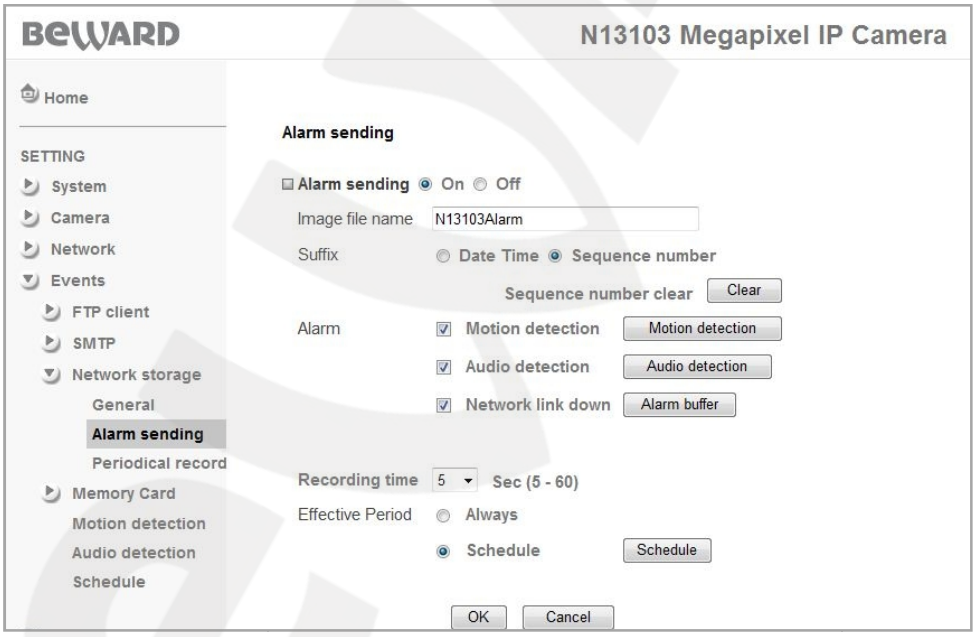
If the test is not successfully completed, please check network storage address, its availability and account settings.

IMPORTANT:
To playback recorded video, use the integrated player at ***SETTING – Camera – Playback***, otherwise you may need to install third party software, e.g. VLC media player. Its official website is http://www.videolan.org/vlc/.

9.3.2. Alarm Sending

This menu allows you to configure alarm triggered (e.g. motion detection triggered) recording to network attached storage. Select the option for **[On]** (*Pic. 9.15*) to enable this function or select the option for **[Off]** to disable it.

NOTE:
The path to the **«Alarm»** folder where the alarm records are stored is the same as is specified for the network storage.



Pic. 9.15

Image file name: type a name for the files recorded to network attached storage.

NOTE:
Image file name may contain only Latin letters, reserved characters and numbers with no spaces in its name.

Suffix: select a suffix to add it to the file name. The following options are available:

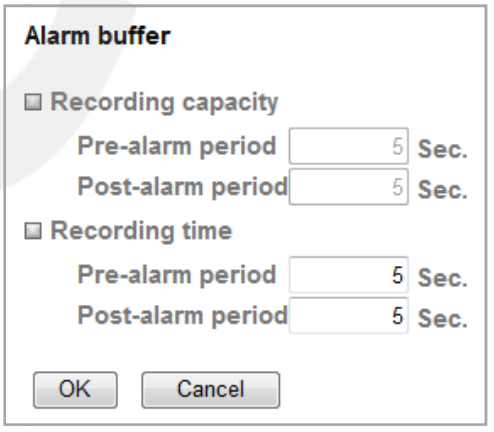
- **Date Time**: adds the date and time that correspond to the date and time the file was created. This suffix contains the year as 4 digits, the month as 2 digits, the day as 2 digits, the hour as 2 digits, the minute as 2 digits, the second as 2 digits. Totally, this adds a fourteen-digit suffix to the file name.
- **Sequence number**: adds a six-digit number. User can click the **[Clear]** button to reset the sequence number anytime. When user clicks the **[Clear]** button it resets the sequence number and starts it from 000001.

Alarm: allows you to select an event that triggers recording to network attached storage:

- **Motion detection**: the camera starts recording to network attached storage when motion detection is triggered. To configure this option, click the **[Motion detection]** button (appears if the **[Motion detection]** box is checked) or go to ***SETTING – Events – Motion detection***. See paragraph 9.5 for details.
- **Audio detection**: the camera starts recording to network attached storage when audio detection is triggered. To configure this option, click the **[Audio detection]** button (appears if the **[Audio detection]** box is checked) or go to ***SETTING – Events – Audio detection***. See paragraph 9.6 for details.

IMPORTANT:
When motion or audio detection triggers, video files length depends on the value specified in the **[Recording time]** menu.

- **Network link down**: when this option is enabled, the camera starts recording to network attached storage when a network error occurs. When the connection is lost, the camera sends the records made before and after the connection lost to the temporary buffer. After the connection is up, the camera sends these files to network attached storage. To configure this option, click the **[Alarm buffer]** button (appears if the **[Network link down]** box is checked) (*Pic. 9.16*).



Pic. 9.16

NOTE:
Duration of sent video files is 5 seconds, however the file size is 2 MB maximum. Therefore video file duration may be less than 5 seconds even if user specifies the value of 5 seconds in the **[Alarm buffer]** menu.

IMPORTANT:
When you configuring this menu, be aware that these parameters are applied to the other camera functions, for example to recording to network storage, FTP, etc.

Recording capacity: shows maximum record time for the corresponding events and is provided for informational purposes only.

- **Pre-alarm period**: maximum record time before the connection was down.
- **Post-alarm period**: maximum record time after connection was down.

Recording time: allows you to set a record time for the corresponding events.

- **Pre-alarm period**: record time before connection was down.
- **Post-alarm period**: record time after connection was down.

Recording time: select the length (from 5 to 60 seconds) for the file recorded after an alarm event occurred. The camera records in avi format.

Effective period: allows you to set a period for recording to network attached storage when an alarm is triggered. The following options are available:

- **Always**: select this option for continuous recording to network attached storage.
- **Schedule**: select this option for scheduled recording to network attached storage. To configure this option, click the **[Schedule]** button or go to ***SETTING – Events – Schedule***. See paragraph 9.7 for details.

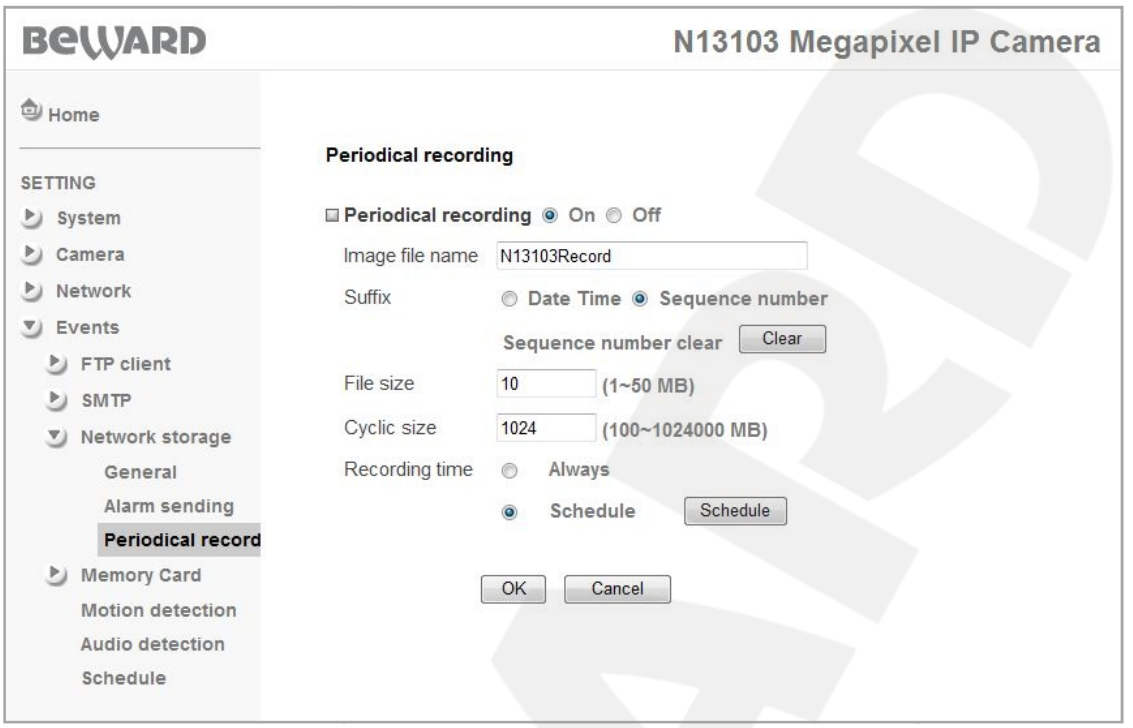
NOTE:
Click **[OK]** to save changes. Otherwise, the changes may not be saved.

9.3.3. Periodical recording

This menu allows you to configure scheduled recording to a computer with shared folder, a network attached storage (NAS), etc.

Select the option for **[On]** to enable scheduled recording *(Pic. 9.17)* or select the option for **[Off]** to disable it.

NOTE:
The path to the **«Period»** folder where the alarm records are stored is the same as is specified for the network storage.



Pic. 9.17

Image file name: type a name for the files recorded to network attached storage.

NOTE:
Image file name may contain only Latin letters, reserved characters and numbers with no spaces in its name.

Suffix: select a suffix to add it to the file name. The following options are available:

- **Date Time**: adds the date and time that correspond to the date and time the file was created. This suffix contains the year as 4 digits, the month as 2 digits, the day as 2 digits, the hour as 2 digits, the minute as 2 digits, the second as 2 digits. Totally, this adds a fourteen-digit suffix to the file name.
- **Sequence number**: adds a six-digit number. User can click the **[Clear]** button to reset the sequence number anytime. When user clicks the **[Clear]** button it resets the sequence number and starts it from 000001.

File size: specify the size for the files recorded to network attached storage. The size is from 1 to 50 MB. The camera records in avi format.

Cyclic size: specify the disk space on network attached storage to store files recorded by the camera. The size is from 100 MB to 1 TB. After the specified disk space is full, the oldest files are overwritten with the new ones.

NOTE:
When the maximum size is reached, it automatically overwrites old files. However, the new files may be written with a time delay, which corresponds to a total time required for deleting the old files and recording the new ones.

IMPORTANT:
If the camera has been recording by alarm when the periodical recording starts, the periodical recording will be stopped and resumed only after alarm triggered recording is completed.

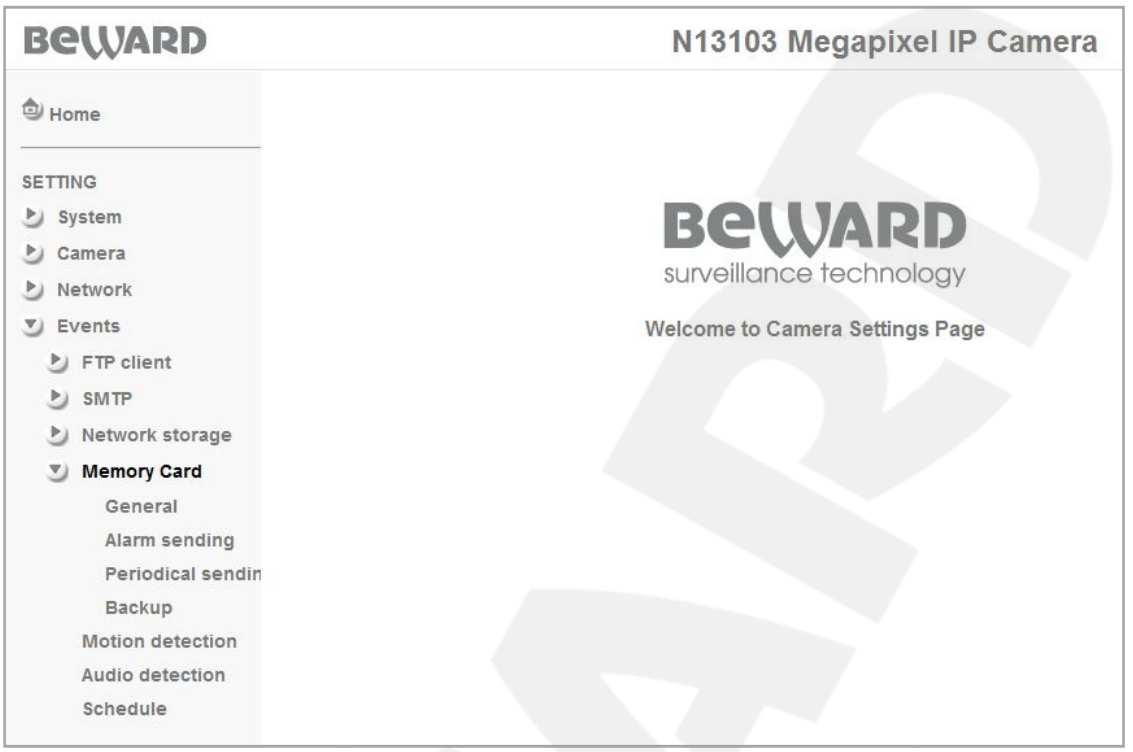
Recording time: allows you to set a period for recording to network attached storage when an alarm is triggered. The following options are available:

- **Always**: select this option for continuous recording to network attached storage.
- **Schedule**: select this option for scheduled recording to network attached storage. To configure this option, click the **[Schedule]** button or go to ***SETTING – Events – Schedule***. See paragraph 9.7 for details.

NOTE:
Click **[OK]** to save changes. Otherwise, the changes may not be saved.

9.4. Memory Card

This menu allows you to configure recording to a memory card. When this function is enabled, the camera can record files continuously, with a certain time interval, when an event occurs, or it is possible to save files to a memory card when the network connection is failed or network storage or FTP is unavailable. This menu contains the following sections: **[General]**, **[Alarm sending]**, **[Periodical sending]**, and **[Backup]** (*Pic. 9.18*).



Pic. 9.18

9.4.1. General

Select the option for **[On]** to enable recording to a memory card or select the option for **[Off]** to disable it (*Pic. 9.19*).

After inserting a memory card, you need to format. Make sure that **[Memory card]** item is set to **[Off]**.

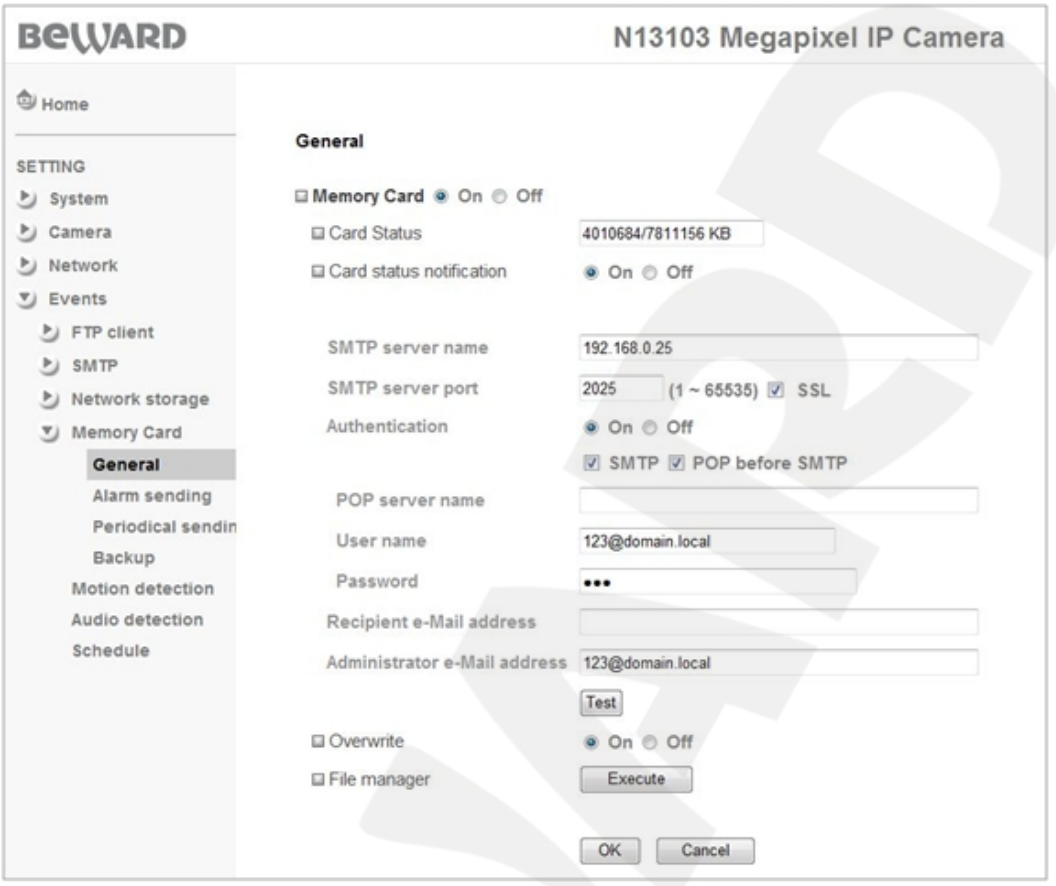
Memory card format may take several minutes and requires camera restart.

If memory card is unavailable or there are errors in memory card operation, the indicator on camera's casing will blink red.

After being formatted, memory card is ready to use. Switch the **[Memory card]** item to **[On]**. Click the **[OK]** button to apply the settings.

IMPORTANT:

Insert a memory card only when the camera is turned off. Otherwise this may cause the camera to reboot.



Pic. 9.18

Card status: this item displays information concerning the memory card status such as memory card capacity and free space on it. The disk space is measured in kilobytes (KB) and is displayed in fractional form: free space/capacity (*Pic. 9.19*).

Card status notification: this item allows enabling/disabling camera restart, memory card eject, low disk space alerts that are sent to e-mail.

NOTE:
When the **[Capacity warning]** is enabled, e-mail parameters are available for configuring. They are used for sending alert e-mails.

When the **[Overwrite]** is enabled or the **[Capacity warning]** is set to **[Off]**, the camera sends alerts only when it is restarted or memory card is ejected.

Capacity warning: allows enabling/disabling alerts that will be sent to a specified e-mail address when the memory card is full at 5%, 10%, 25% or 50%.

NOTE:
The **[Capacity warning]** item is available only when **[Overwrite]** is disabled.

SMTP server name: type the SMTP server IP address or name (64 characters maximum).

SMTP server port: type the SMTP server port number. The default value is 25.

SSL: check this box if the provider requires SSL communications.

Authentication: select an authentication type to send e-mails.

- **Off**: no authentication is required.
- **On**: authentication is required. You can select **[SMTP]** or **[POP before SMTP]**.

POP server name: this item is displayed when the **[POP before SMTP]** option is selected. The POP server name is used for authorization (64 characters maximum).

User name: type a username to access the mail server (64 characters maximum).

Password: type a password to access the mail server (64 characters maximum).

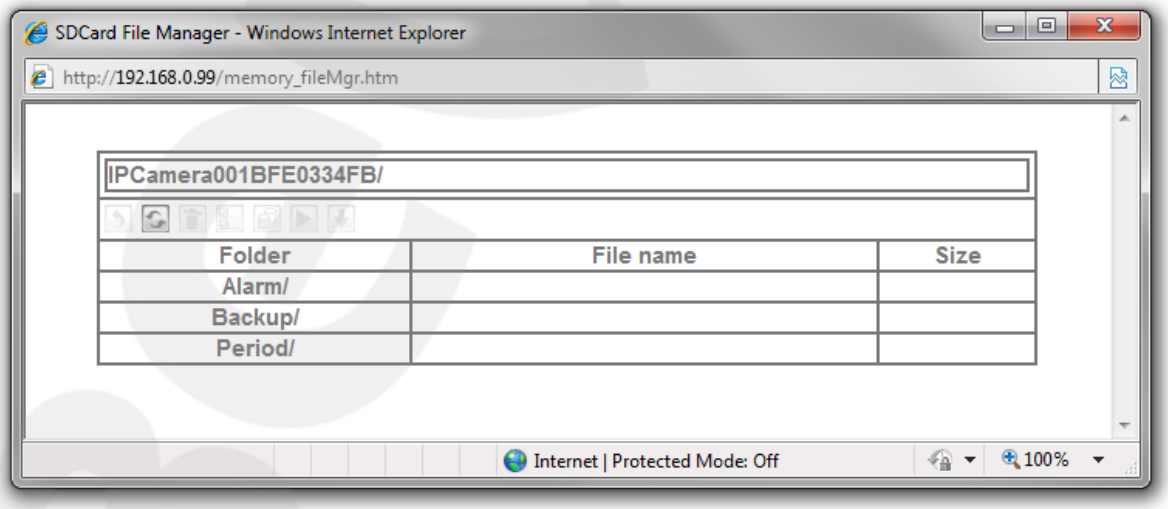
Recipient e-mail address: type the receiver's e-mail address (64 characters maximum). You can type up to 3 e-mail addresses separating them by using a semicolon **[;]**.

Administrator e-mail address: type the sender's e-mail address (64 characters maximum).

[Test]: click this button to check the file transfer parameters and transfer a test file.

Overwrite: select the option for **[On]** to automatically overwrite the old files with the new ones when the memory card is full. Select the option for **[Off]** to disable overwriting of the old files. If user selects the option for **[Off]**, the camera will save records to the memory card until the disk space is exhausted. After that the camera stops saving records to the memory card until user manually deletes the files.

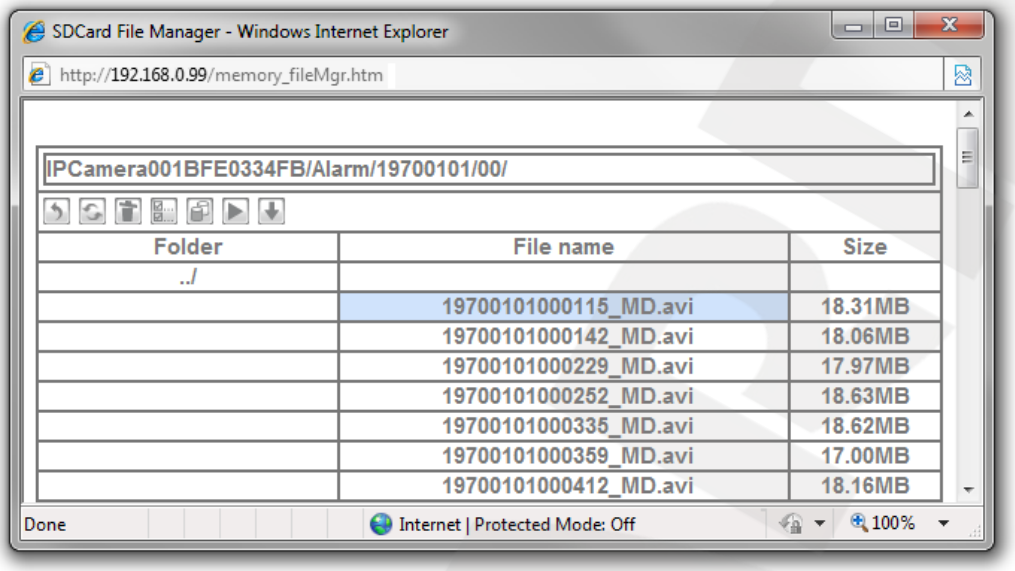
File manager: click the **[Execute]** button to open the file manager (*Pic. 9.19*) so that user can easily access the files on the memory card. *Picture 9.20* shows how the directories are arranged on the memory card.



Pic. 9.20

The **"Alarm"** directory contains alarm triggered records; the **"Period"** directory contains files recorded with specified time intervals; the **"Backup"** directory contains files recorded with the use of the **[Backup]** option.

If open a directory in the file manager, the control buttons will be available (*Pic. 9.21*).



Pic. 9.21

The control buttons are shown in the table below:

Button	Function	Purpose
	[Return]	Goes back one page view.
	[Refresh]	Updates the view of the current selected object. Since the camera supports continuous recording, the files saved to the memory card after the file manager is opened may not be displayed. Click this button update the view and see the newest files.
	[Delete]	Deletes a selected file or folder from the memory card.
	[Select all]	Selects all displayed items.
	[Save to network storage]	Saves a selected file or a group of files to network storage (see paragraph 9.3.1 for detailed information). **SD** folder is created on network storage and its structure is the same as the structure on the memory card.
	[Remote playback]	Plays a file on the memory card.

	[Download]	Saves a selected file to a computer.

IMPORTANT:

To playback recorded video, use the integrated player at ***SETTING – Camera – Playback***, otherwise you may need to install third party software, e.g. VLC media player. Its official website is http://www.videolan.org/vlc/.

NOTE:

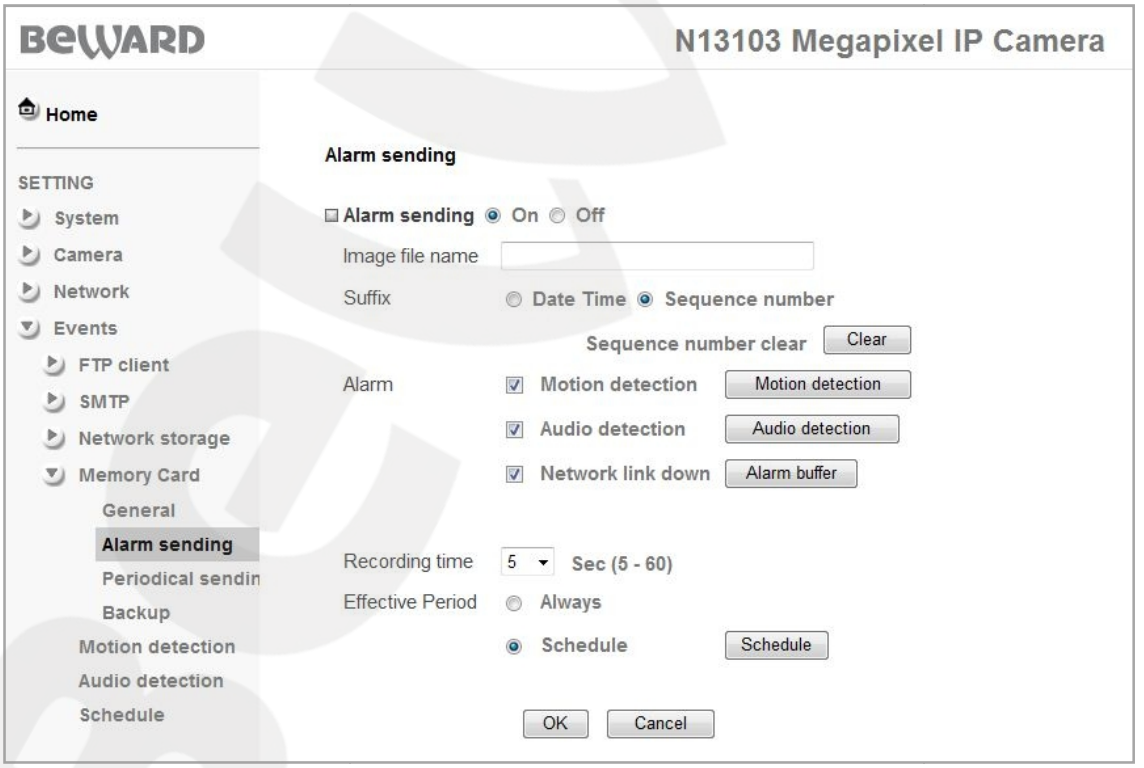
Click **[OK]** to save changes. Otherwise, the changes may not be saved.

9.4.2. Alarm Sending

This menu allows configuring alarm triggered recording to a memory card. Select the option for **[On]** to enable this option or select the option for **[Off]** to disable it. *Picture 9.22*.

NOTE:

The alarm records are stored in the **IPCamera** folder located in the **[Alarm]** folder.



Pic. 9.22

Image file name: type a name for the files recorded to a memory card.

NOTE:
Image file name may contain only Latin letters, reserved characters and numbers with no spaces in its name.

Suffix: select a suffix to add it to the file name. The following options are available:

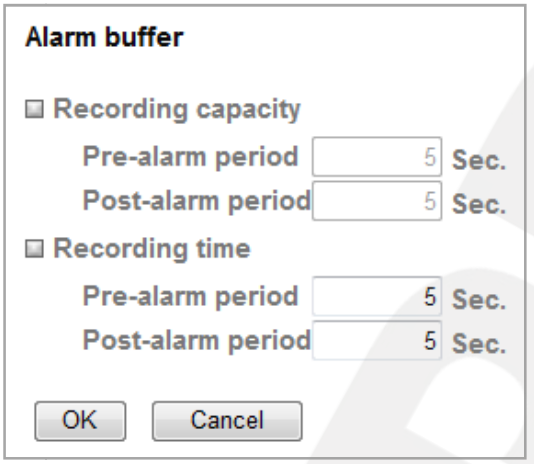
- **Date Time**: adds the date and time that correspond to the date and time the file was created. This suffix contains the year as 4 digits, the month as 2 digits, the day as 2 digits, the hour as 2 digits, the minute as 2 digits, the second as 2 digits. Totally, this adds a fourteen-digit suffix to the file name.
- **Sequence number**: adds a six-digit number. User can click the **[Clear]** button to reset the sequence number anytime. When user clicks the **[Clear]** button it resets the sequence number and starts it from 000001.

Alarm: allows you to select an event that triggers recording to network attached storage:

- **Motion detection**: the camera starts recording to a memory card when motion detection is triggered. To configure this option, click the **[Motion detection]** button (appears if the **[Motion detection]** box is checked) or go to ***SETTING – Events – Motion detection***. See paragraph 9.5 for details.
- **Audio detection**: the camera starts recording to a memory card when audio detection is triggered. To configure this option, click the **[Audio detection]** button (appears if the **[Audio detection]** box is checked) or go to ***SETTING – Events – Audio detection***. See paragraph 9.6 for details.

IMPORTANT:
When motion or audio detection triggers, video files length depends on the value specified in the **[Recording time]** menu.

- **Network link down**: when this option is enabled, the camera starts recording to a memory card when a network error occurs. When the connection is lost, the camera sends the records made before and after the connection lost to the temporary buffer. After the connection is up, the camera sends these files to network attached storage. To configure this option, click the **[Alarm buffer]** button (appears if the **[Network link down]** box is checked) (*Pic. 9.23*).



Pic. 9.23

IMPORTANT:
When you configuring this menu, be aware that these parameters are applied to the other camera functions, for example to recording to network storage, FTP, etc.

Recording capacity: shows maximum record time for the corresponding events and is provided for informational purposes only.

- **Pre-alarm period**: maximum record time before the connection was down.
- **Post-alarm period**: maximum record time after connection was down.

Recording time: allows you to set a record time for the corresponding events.

- **Pre-alarm period**: record time before connection was down.
- **Post-alarm period**: record time after connection was down.

IMPORTANT:
When the **[Alarm buffer]** option is enabled, maximum length of transferred video corresponds to pre- and post buffer size.

Recording time: select the length (from 5 to 60 seconds) for the file recorded after an alarm event occurred. The camera records in avi format.

Effective period: allows you to set a period for recording to a memory card when an alarm is triggered. The following options are available:

- **Always**: select this option for continuous recording to a memory card.
- **Schedule**: select this option for scheduled recording to a memory card. To configure this option, click the **[Schedule]** button or go to ***SETTING – Events – Schedule***. See paragraph 9.7 for details.

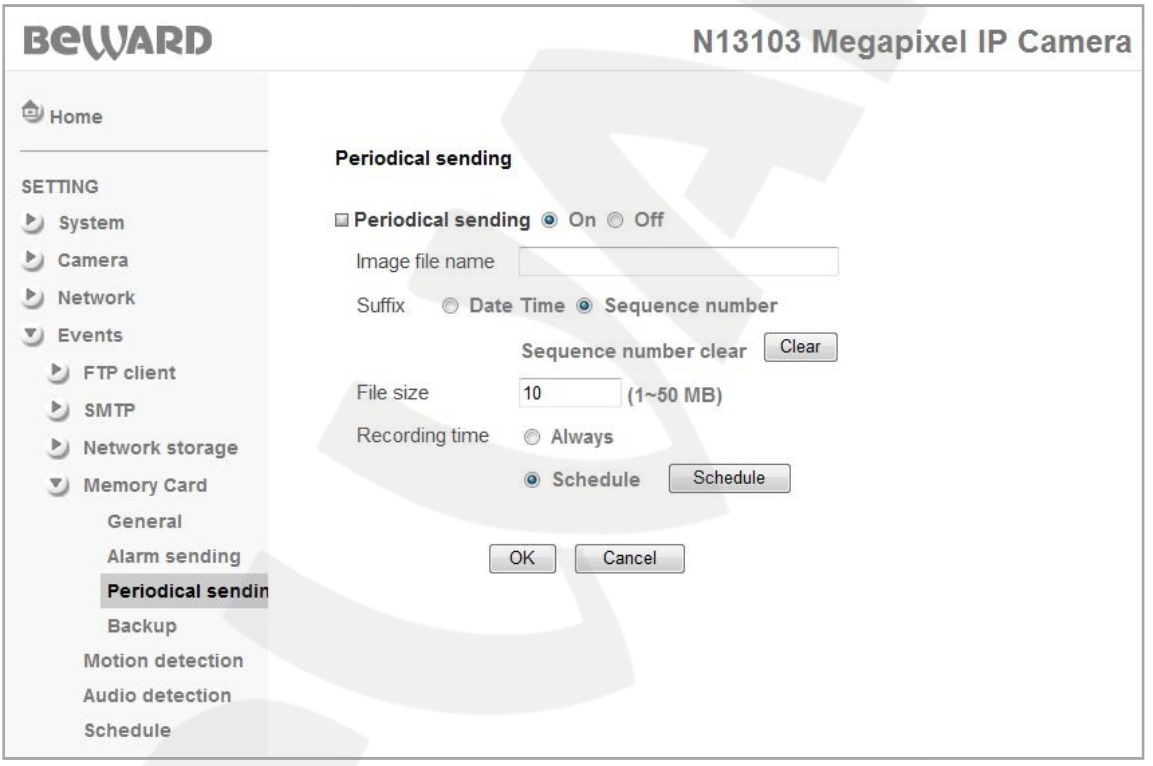
NOTE:
Click **[OK]** to save changes. Otherwise, the changes may not be saved.

9.4.3. Periodical Sending

This menu allows you to configure scheduled recording to a memory card.

Select the option for **[On]** to enable scheduled recording *(Pic. 9.24)* or select the option for **[Off]** to disable it.

NOTE:
All periodical records in the **IPCamera** folder located in the **[Period]** folder.



Pic. 9.24

Image file name: type a name for the files recorded to a memory card.

NOTE:
Image file name may contain only Latin letters, reserved characters and numbers with no spaces in its name.

Suffix: select a suffix to add it to the file name. The following options are available:

- **Date Time**: adds the date and time that correspond to the date and time the file was created. This suffix contains the year as 4 digits, the month as 2 digits, the day as 2

digits, the hour as 2 digits, the minute as 2 digits, the second as 2 digits. Totally, this adds a fourteen-digit suffix to the file name.

- **Sequence number**: adds a six-digit number. User can click the **[Clear]** button to reset the sequence number anytime. When user clicks the **[Clear]** button it resets the sequence number and starts it from 000001.

File size: specify the size for the files recorded to a memory card. The size is from 1 to 50 MB. The camera records in AVI format.

Cyclic size: specify the disk space on a memory card to store files recorded by the camera. The size is from 100 MB to 1 TB. After the specified disk space is full, the oldest files are overwritten with the new ones.

NOTE:
When the maximum size is reached, it automatically overwrites old files. However, the new files may be written with a time delay, which corresponds to a total time required for deleting the old files and recording the new ones.

IMPORTANT:
If the camera has been recording by alarm when the periodical recording starts, the periodical recording will be stopped and resumed only after alarm triggered recording is completed.

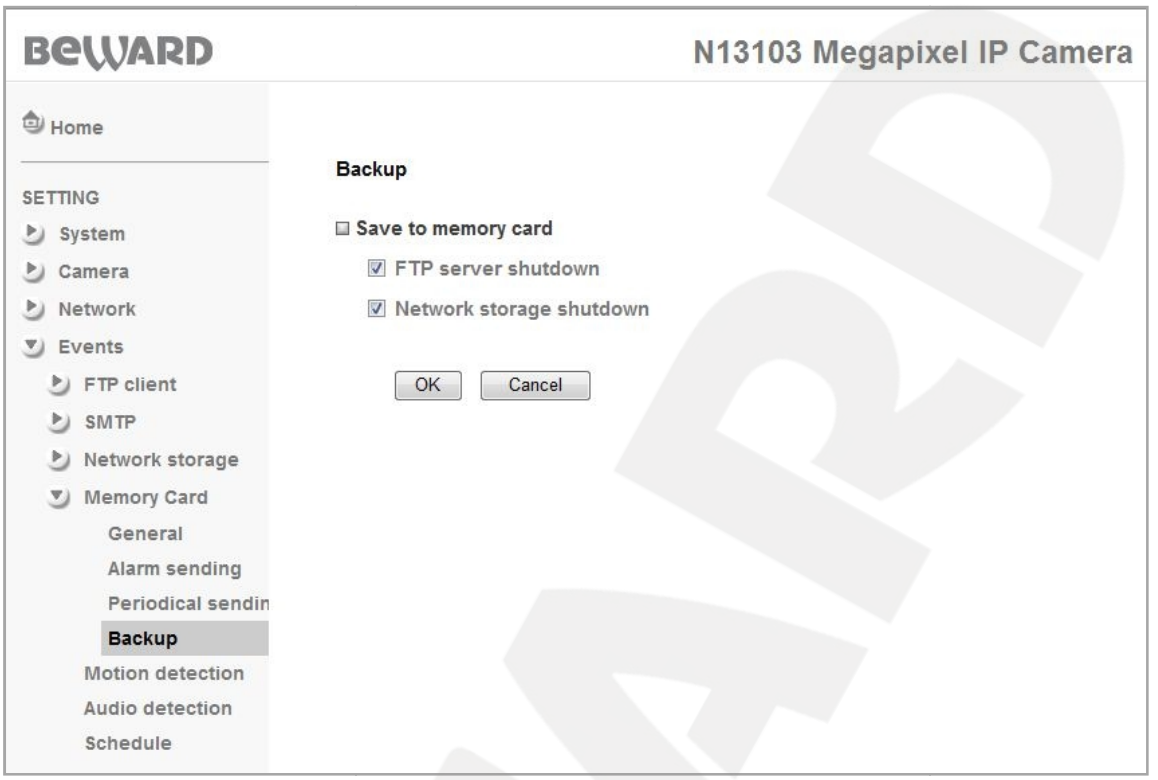
Recording time: allows you to set a period for recording to a memory card when an alarm is triggered. The following options are available:

- **Always**: select this option for continuous recording to a memory card.
- **Schedule**: select this option for scheduled recording to a memory card. To configure this option, click the **[Schedule]** button or go to ***SETTING – Events – Schedule***. See paragraph 9.7 for details.

NOTE:
Click **[OK]** to save changes. Otherwise, the changes may not be saved.

9.4.4. Backup

This menu allows configuring the camera to automatically backup files to a memory card when a network storage or an FTP server are disabled or unavailable (*Pic. 9.25*). The camera automatically checks the availability of network storage and FTP server, if they are unavailable, the camera saves files to a memory card to a corresponding folder. If an FTP server or a network storage become available, the camera stops saving records to a memory card and resumes recording to a network storage or to an FTP server.



Pic. 9.25

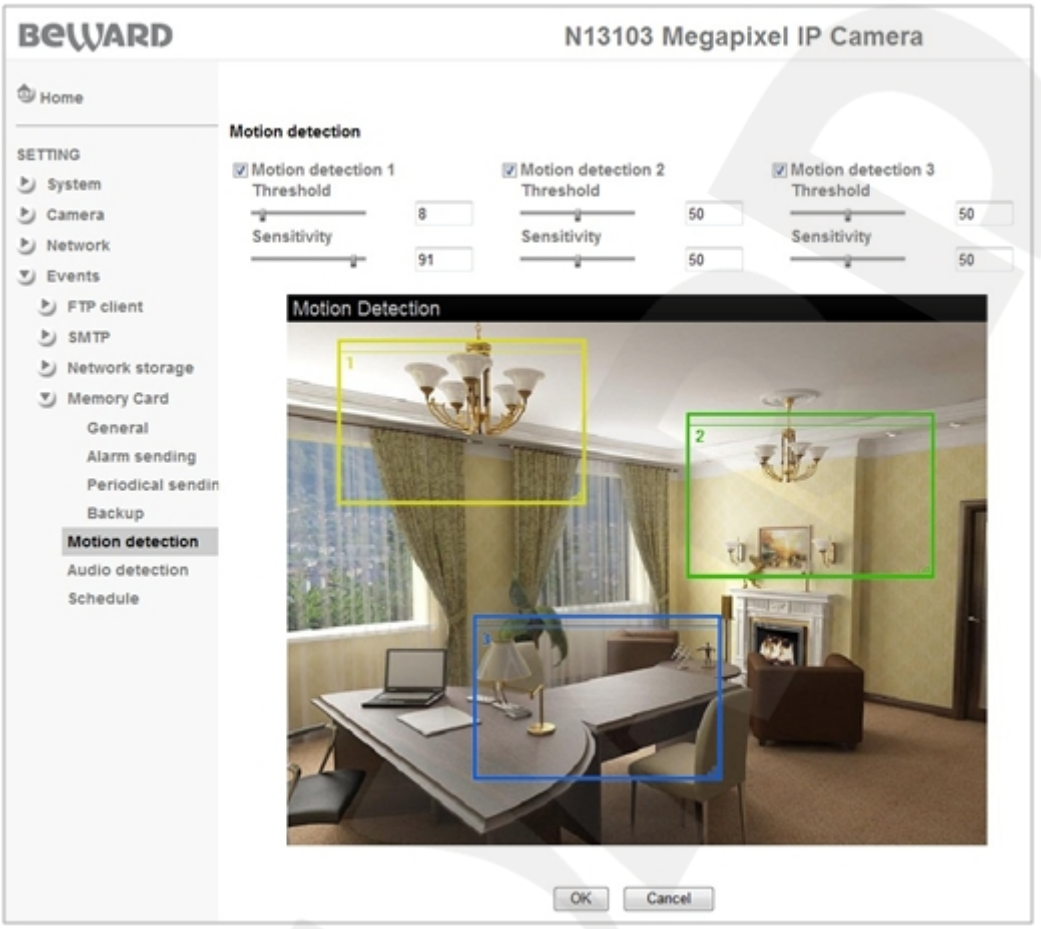
Save to memory card: this item provides two options that enable automatic recording to a memory card when an FTP or a network storage is unavailable, respectively. Select the option for the **[FTP server shutdown]** so that the camera will save records to a memory card when an FTP is unavailable. Select the option for the **[Network storage shutdown]** so that the camera will save records to a memory card when a network storage is unavailable.

IMPORTANT:

When **Backup** and **Periodical** recording are used at one time and NAS or FTP are unavailable, the camera will use only periodical recording. Therefore, the camera will record files to memory card using the parameters specified in paragraph 9.4.3.

9.5. Motion Detection

You can set up to 3 detection areas that may cross each other. Besides, you can adjust threshold and sensitivity for each of these areas. If this option is enabled, it triggers an alarm after motion is detected in any of these areas and allows reducing recorded data size. When motion detection is triggered, the camera sends an e-mail notification or sends a file to e-mail, FTP, or network storage (*Pic. 9.26*).



Pic. 9.26

Threshold: allows adjusting the motion detection threshold for each of the areas. The closer the slider to the right position, the more the image must change to activate the motion detection.

Sensitivity: allows adjusting the motion detection sensitivity for each of the areas. The closer the slider to the right position, the more the sensor is sensitive.

Motion detection 1: check this box to enable this area.

Motion detection 2: check this box to enable this area.

Motion detection 3: check this box to enable this area.

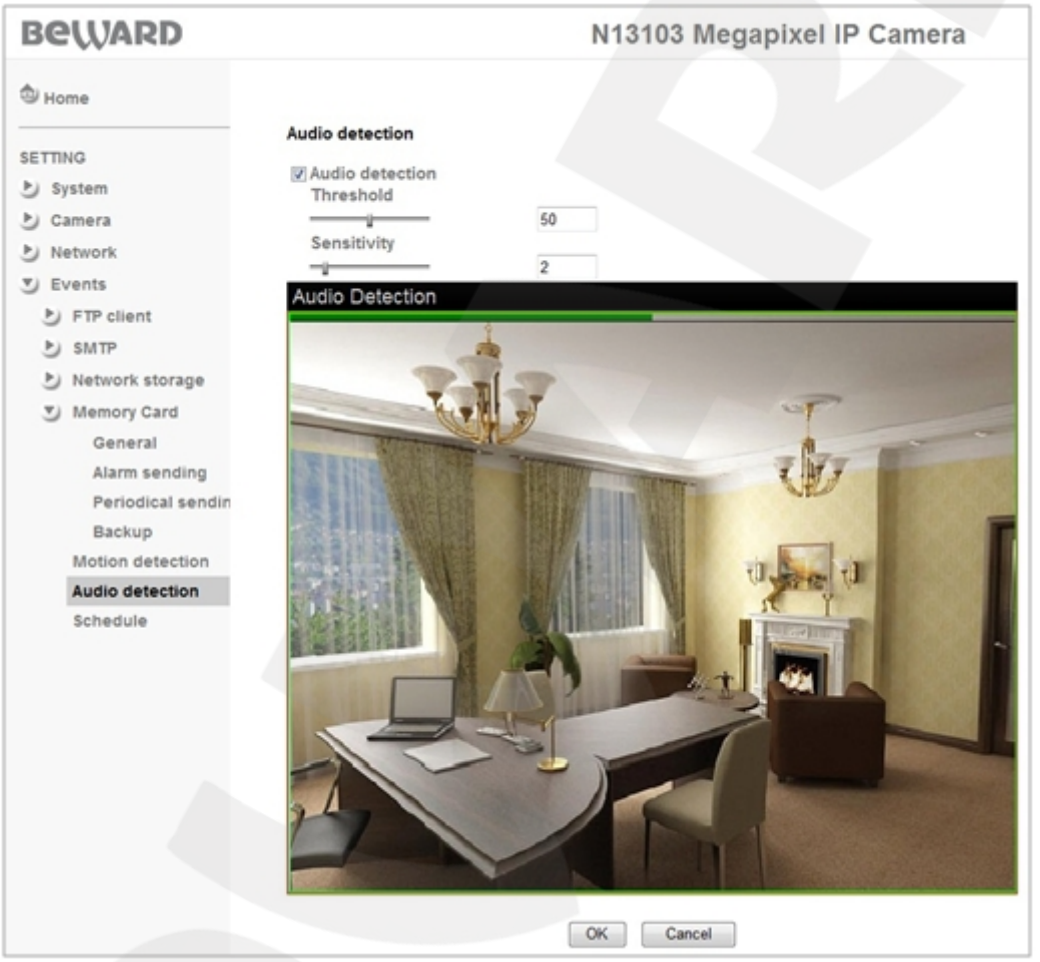
To set an area, drag the right bottom corner of the frame. You can change its size by dragging any of its corners. To move an area, click and hold left mouse button on an area and move it to the required position.

IMPORTANT:

When you configuring this menu, be aware that these parameters are applied to the other camera functions, for example to recording to network storage, FTP, etc.

9.6. Audio Detection

This menu allows you to configure audio detection so that the camera uses the detected noise as a trigger to transmit and record video. It is possible to adjust audio detection threshold and sensitivity. This feature limits the total recorded capacity since the camera starts recording only when it detects noise. When the audio detection triggers, the camera creates an alert message or file and sends it to e-mail, FTP server, network storage, or over HTTP (*Pic. 9.26*).



Pic. 9.26

Threshold: allows adjusting the audio detection threshold.

Sensitivity: allows adjusting the audio detection sensitivity. The closer the slider to the right position, the more the sensor is sensitive.

You can see the sound indicator in the live view window. The green frame means that the camera detects noise; the red frame means that the threshold is exceeded and the audio detection is activated.

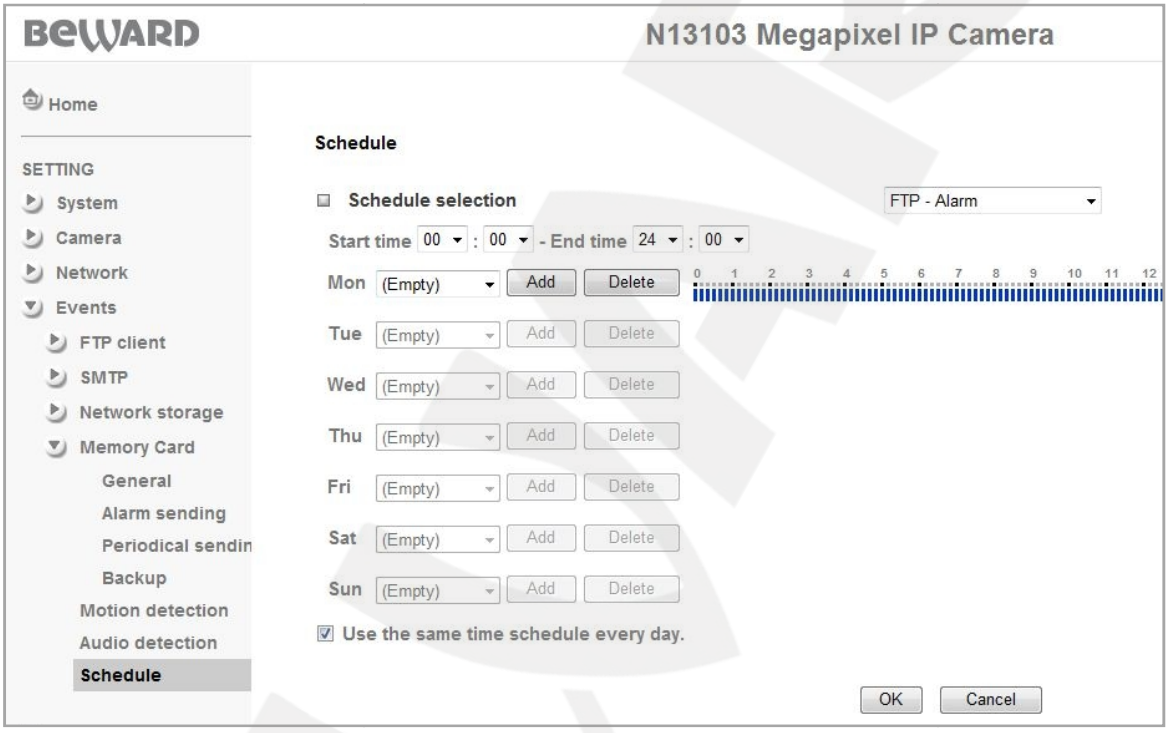
IMPORTANT:

To use audio detection, you need to enable audio in ***SETTING – Camera – General***.

IMPORTANT:
When you configuring this menu, be aware that these parameters are applied to the other camera functions, for example to recording to network storage, FTP, etc.

9.7. Schedule

This section allows you to specify a schedule for the functions mentioned before. You can specify a schedule for each day of the week or apply it for a whole week by checking the **[Use the same time schedule every day]** box (*Pic. 9.28*).



Pic. 9.28

Schedule selection: allows you to specify a schedule for a certain event. The following events are available: **[FTP – Alarm]**, **[FTP – Periodical]**, **[E-mail (SMTP) – Alarm]**, **[E-mail (SMTP) – Periodical]**, **[Record – Alarm]**, **[Record – Periodical]**, **[Memory card – Alarm]**, **[Memory card – Periodical]**.

Start time, End time: allows you to specify a time interval. The first field is for selecting an hour (00 to 23); the second field is for selecting a minute (00 to 55 in increments of 5).

Days of the week area: the following options are available for each day of the week:

- **Time interval**: this is a drop-down list containing time intervals that were specified for each day of the week. If no interval is specified, the drop-down list will be empty.
- **[Add] button**: click this button to add a time interval, which was specified in the **[Start time]** and **[End time]** fields, to the schedule.
- **[Delete] button**: removes a time interval from the schedule.

For user's convenience, the intervals appear as a scale, where blue color means that no interval is set for this period and red color shows the specified intervals.

NOTE:
User can specify only 5 intervals for each day of the week.

Use the same time schedule every day: applies the schedule that was specified for Monday to the whole week.

NOTE:
Click **[OK]** to save the current schedule.

Appendix

Appendix A. Bitrate Values

The tables below help you to estimate bitrate, considering the quality level and frames per second. See the information below to choose optimal parameters for your bandwidth.

For example, if you connect to the Internet over ADSL 256 kbps / 2 Mbps, the optimal solution is to select the standard quality, 640x480 resolution and 256 kbps bitrate.

A.1. H.264 15 fps – kbps

Quality	1280*1024	1280*720	640*480	320*240
Excellent	2800	1900	300	90
Detailed	1700	1300	200	75
Good	1300	900	170	60
Standard	800	600	150	55
Medium	600	450	130	45

A.2. H.264 10 fps – kbps

Quality	1280*1024	1280*720	640*480	320*240
Excellent	1900	1400	250	70
Detailed	1200	900	180	60
Good	900	650	160	55
Standard	650	450	130	50
Medium	450	350	120	40

A.3. H.264 fps – kbps

Resolution	Bitrate	Fps	Medium rate	Medium fps
1280*1024	6144	15	6300	15
1280*1024	6144	10	6300	10
1280*1024	2048	15	2200	15
1280*1024	2048	10	2200	10
1280*1024	512	15	550	15
1280*1024	512	10	550	10
1280*720	6144	15	6300	15
1280*720	6144	10	6300	10
1280*720	2048	15	2200	15

1280*720	2048	10	2200	10
1280*720	512	15	550	15
1280*720	512	10	550	10
640*480	6144	15	6300	15
640*480	6144	10	6300	10
640*480	2048	15	2200	15
640*480	2048	10	2200	10
640*480	512	15	550	15
640*480	512	10	550	16
320*240	6144	15	5100	15
320*240	6144	10	3600	10

A.4. MPEG4 15 fps – kbps

Quality	1280*1024	1280*720	640*480	320*240
Excellent	3800	3000	600	130
Detailed	2900	2200	450	110
Good	1800	1400	300	90
Standard	1200	900	250	70
Medium	900	600	200	60

A.5. MPEG4 10 fps – kbps

Quality	1280*1024	1280*720	640*480	320*240
Excellent	3000	2300	500	110
Detailed	2200	1600	400	100
Good	1400	1100	250	80
Standard	950	700	200	65
Medium	700	550	180	50

A.6. MJPEG fps – kbps

Resolution	Bitrate	Fps	Medium rate	Medium fps
1280*1024	6144	15	5200	12
1280*1024	6144	10	6300	10
1280*1024	2048	15	2200	15
1280*1024	2048	10	2200	10

1280*1024	512	15	550	15
1280*1024	512	10	550	10
1280*720	6144	15	6300	15
1280*720	6144	10	6300	10
1280*720	2048	15	2200	15
1280*720	2048	10	2200	10
1280*720	512	15	550	15
1280*720	512	10	550	10
640*480	6144	15	6300	15
640*480	6144	10	6300	10
640*480	2048	15	2200	15
640*480	2048	10	2200	10
640*480	512	15	550	15
640*480	512	10	550	10

A.7. MJPEG 15 fps – kbps

Quality	1280*1024	1280*720	640*480	320*240
Excellent	17500	16000	7800	2600
Detailed	12000	9500	4000	1500
Good	10000	6800	2900	1100
Standard	7000	5100	2200	800
Medium	4300	3200	1400	500

A.8. MJPEG 10 fps – kbps

Quality	1280*1024	1280*720	640*480	320*240
Excellent	16000	14500	5500	1700
Detailed	9000	6500	2700	1000
Good	6500	4700	2000	800
Standard	4700	3500	1500	600
Medium	2800	2200	1000	350

A.9. MJPEG fps – kbps

Resolution	Quality	Fps	Medium rate	Medium fps
1280*1024	Excellent	15	17500	8
1280*1024	Excellent	10	16000	8
1280*1024	Good	15	10000	15
1280*1024	Good	10	6500	10
1280*1024	Medium	15	4300	15
1280*1024	Medium	10	2800	10
1280*720	Excellent	15	16000	12
1280*720	Excellent	10	14500	10
1280*720	Good	15	6800	15
1280*720	Good	10	4700	10
1280*720	Medium	15	3200	15
1280*720	Medium	10	2200	10
640*480	Excellent	15	7800	15
640*480	Excellent	10	5500	10
640*480	Good	15	2900	15
640*480	Good	10	2000	10
640*480	Medium	15	1400	15
640*480	Medium	10	1000	10
320*240	Excellent	15	2600	15
320*240	Excellent	10	1700	10

Appendix B. Required Disk Space

This appendix provides information on required disk space for video records storage, considering its quality, bitrate and frames per second. The numbers listed in these tables are estimates only.

B.1. H.264, 15 fps, 24-hour record – record size (GB).

Quality	1280*1024	1280*720	640*480	320*240
Excellent	232.4	157.7	24.9	7.5
Detailed	141.4	107.9	16.6	6.3
Good	107.9	74.7	14.2	5
Standard	66.4	49.8	12.5	4.6
Medium	49.8	37.4	10.8	3.8

B.2. H.264, 10 fps, 24-hour record – record size (GB).

Quality	1280*1024	1280*720	640*480	320*240
Excellent	157.7	116.2	20.8	5.9
Detailed	99.6	74.7	15	5
Good	74.7	54	13.3	4.7
Standard	54	37.4	10.8	4.2
Medium	37.4	29.1	10	3.4

B.3. H.264, 24-hour record – record size (GB).

Resolution	Bitrate	Fps	Record Size (GB)
1280*1024	6144	15	522.9
1280*1024	6144	10	522.9
1280*1024	2048	15	182.6
1280*1024	2048	10	182.6
1280*1024	512	15	45.7
1280*1024	512	10	45.7
1280*720	6144	15	522.9
1280*720	6144	10	522.9
1280*720	2048	15	182.6
1280*720	2048	10	182.6
1280*720	512	15	45.7

1280*720	512	10	45.7
640*480	6144	15	522.9
640*480	6144	10	522.9
640*480	2048	15	182.6
640*480	2048	10	182.6
640*480	512	15	45.7
640*480	512	10	45.7
320*240	6144	15	423.3
320*240	6144	10	298.8

B.4. MPEG4, 15 fps, 24-hour record – record size (GB).

Quality	1280*1024	1280*720	640*480	320*240
Excellent	315.4	249	49.8	10.8
Detailed	240.7	182.6	37.4	9.2
Good	149.4	116.2	24.9	7.5
Standard	99.6	74.7	20.8	5.9
Medium	74.7	49.8	16.6	5

B.5. MPEG4, 10 fps, 24-hour record – record size (GB).

Quality	1280*1024	1280*720	640*480	320*240
Excellent	249	190.9	41.5	9.2
Detailed	182.6	132.8	33.2	8.3
Good	116.2	91.3	20.8	6.7
Standard	78.9	58.1	16.6	5.4
Medium	58.1	45.7	14.5	4.2

B.6. MPEG4, 24-hour record – record size (GB).

Resolution	Bitrate	Fps	Record Size (GB)
1280*1024	6144	15	431.6
1280*1024	6144	10	522.9
1280*1024	2048	15	182.6
1280*1024	2048	10	182.6
1280*1024	512	15	45.7
1280*1024	512	10	45.7

1280*720	**6144**	**15**	**522.9**
1280*720	**6144**	**10**	**522.9**
1280*720	**2048**	**15**	**182.6**
1280*720	**2048**	**10**	**182.6**
1280*720	**512**	**15**	**45.7**
1280*720	**512**	**10**	**45.7**
640*480	**6144**	**15**	**522.9**
640*480	**6144**	**10**	**522.9**
640*480	**2048**	**15**	**182.6**
640*480	**2048**	**10**	**182.6**
640*480	**512**	**15**	**45.7**
640*480	**512**	**10**	**45.7**

Appendix C. Requests for Images from IP Camera.

This appendix contains standard request for images from IP camera.

1. http://<IP>:<http port> - provides access to IP camera, http port means camera HTTP port, the default value is 80, <IP> means camera IP address, the default value is 192.168.0.99.
   If the default values are used, the request is:
   http://192.168.0.99.

2. http://<IP>:<http port>/index.2.htm – provides access to camera image and the controls are not displayed, http port means camera HTTP port, the default value is 80, <IP> means camera IP address, the default value is 192.168.0.99.
   If the default values are used, the request is:
   http://192.168.0.99/index2.htm - provides access to camera image and the controls are not displayed.

3. https://<IP> - provides secured access to IP camera over https through the port 443, <IP> means camera IP address, the default value is 192.168.0.99.
   If the default values are used, the request is:
   https://192.168.0.99 - provides secured access to IP camera over https.

4. http://<IP>:<port>/mobile.htm - allows you to get an image from a mobile phone over GPRS, port means camera HTTP port, the default value is 80, <IP> means camera IP address, the default value is 192.168.0.99.
   If the default values are used, the request is:
   http://192.168.0.99/mobile.htm

5. rtsp://<IP>:<port>/video.3gp – request for 3GP video, port means camera RTSP port, the default value is 554, <IP> means camera IP address, the default value is 192.168.0.99.
   If the default values are used, the request is:
   rtsp://192.168.0.99:554/video.3gp

6. http://<IP>:<http port>/jpg/image.jpg – request for a JPEG image port means camera HTTP port, the default value is 80, <IP> means camera IP address, the default value is 192.168.0.99. If the default values are used, the request is:
   http://192.168.0.99/jpg/image.jpg

7. http://<IP>:< port>/video.mp4 – request for MPEG4 video, port means camera RTSP port, the default value is 554, <IP> means camera IP address, the default value is 192.168.0.99. If the default values are used, the request is:
   rtsp://192.168.0.99:554/video.mp4

8. http://<IP>:< port>/video.mjpg - request for MJPEG video, port means camera RTSP port, the default value is 554, <IP> means camera IP address, the default value is 192.168.0.99. If the default values are used, the request is:
   rtsp://192.168.0.99:554/video.mjpg

Appendix D. Port Values

Port	Default Value	Range of Values
HTTP	**80**	**1124..65535**
HTTP forwarding over UPnP	**80**	**1024..65535**
HTTPS forwarding over UPnP	**443**	**1024..65535**
RTSP	**554**	**1124..65535**
RTSP forwarding over UPnP	**554**	**1024..65535**
SMTP	**25**	**1..65535**
System log remote server port	**514**	**1024..65535**
Motion detection	**1999**	**-**

Appendix E. Factory Defaults

This table provides camera factory defaults

Parameter	Value
IP address	**192.168.0.99**
Subnet mask	**255.255.255.0**
Gateway	**192.168.0.1**
Username (administrator)	**admin**
Password (administrator)	**admin**
HTTP port	**80**
RTSP port	**554**
SMTP port	**25**

Appendix F. Glossary

3GP (3GPP file format) is a multimedia container format defined by the Third Generation Partnership Project (3GPP) for 3G UMTS multimedia services. It is used on 3G mobile phones but can also be played on some 2G and 4G phones.

ActiveX is a standard that enables software components to interact with one another in a networked environment, regardless of the language(s) used to create them. Web browsers may come into contact with ActiveX controls, ActiveX documents, and ActiveX scripts. ActiveX controls are often downloaded and installed automatically as required.

Asymmetric Digital Subscriber Line (ADSL) is an obsolete type of Digital Subscriber Line technology, a data communications technology that enables faster data transmission over copper telephone lines than a conventional voiceband modem can provide.

Angle is the field of view, relative to a standard lens in a 35mm still camera, expressed in degrees, e.g. 30°. For practical purposes, this is the area that a lens can cover, where the angle of view is determined by the focal length of the lens. A wide-angle lens has a short focal length and covers a wider angle of view than standard or telephoto lenses, which have longer focal lengths.

ARP (Address Resolution Protocol) is used to associate an IP address to a hardware MAC address. A request is broadcast on the local network to discover the MAC address for an IP address.

Aspect ratio is a ratio of width to height in images. A common aspect ratio used for television screens and computer monitors is 4:3. High-definition television (HDTV) uses an aspect ratio of 16:9.

Authentication is the process of identifying an individual, usually based on a username and password. In security systems, authentication is distinct from authorization, which is the process of giving individuals access to system objects based on their identity. Authentication merely ensures that the individual is who he or she claims to be, but says nothing about the access rights of the individual.

Autoiris (or DC-Iris).This special type of iris is electrically controlled by the camera, to automatically regulate the amount of light allowed to enter.

Bit rate: (in kbit/s or Mbit/s) is often referred to as speed, but actually defines the number of bits/time unit and not distance/time unit.

Backlight Compensation compensates for strong backlighting, so that subjects appear clearly instead of as silhouettes.

Bonjour, also known as zero-configuration networking, Bonjour enables automatic discovery of computers, devices, and services on IP networks. Bonjour allows devices to automatically discover each other without the need to enter IP addresses or configure DNS servers. Bonjour is developed by Apple Computer Inc.

CCD (Charged Coupled Device). This light-sensitive image device used in many digital cameras is a large integrated circuit that contains hundreds of thousands of photo-sites (pixels) that convert light energy into electronic signals. Its size is measured diagonally and can be 1/4", 1/3", 1/2" or 2/3".

CGI (Common Gateway Interface) is a specification for communication between a web server and other (CGI) programs. For example, a HTML page that contains a form might use a CGI program to process the form data once it is submitted.

Classless Inter Domain Routing (CIDR) is a method for assigning IP addresses without using the standard IP address classes like Class A, Class B or Class C. In CIDR notation, an IP address is represented as A.B.C.D /n, where "/n" is called the IP prefix or network prefix. The IP prefix identifies the number of significant bits used to identify a network. For example, 192.9.205.22 /18 means, the first 18 bits are used to represent the network and the remaining 14 bits are used to identify hosts. Common prefixes are 8, 16, 24, and 32.

Complementary metal–oxide–semiconductor (CMOS) is a technology for constructing integrated circuits. CMOS technology is used in microprocessors, microcontrollers, static RAM, and other digital logic circuits. CMOS technology is also used for several analog circuits such as image sensors (CMOS sensor), data converters, and highly integrated transceivers for many types of communication.

Dynamic DNS is a method/protocol/network service that provides the capability for a networked device, such as a router or computer system using the Internet Protocol Suite, to notify a Domain Name System (DNS) name server to change, in real time, the active DNS configuration of its configured hostnames, addresses or other information.

DHCP (Dynamic Host Configuration Protocol) is a protocol that lets network administrators automate and centrally manage the assignment of Internet Protocol (IP) addresses to network devices in a network. DHCP uses the concept of a "lease" or amount of time that a given IP address will be valid for a computer. The lease time can vary, depending on how long a user is likely to require the network connection at a particular location. DHCP also supports static addresses for e.g. computers running web servers, which need a permanent IP address.

Digital zoom is a method of decreasing (narrowing) the apparent angle of view of a digital photographic or video image. Digital zoom is accomplished by cropping an image down to a centered area with the same aspect ratio as the original, and usually also interpolating the result back up to the pixel dimensions of the original. It is accomplished electronically, with no adjustment of the camera's optics, and no optical resolution is gained in the process.

Domain server can also be used by organizations that wish to centralize the management of their (Windows) computers. Each user within a domain has an account that usually allows them to log in to and use any computer in the domain, although restrictions may also apply. The domain server is the server that authenticates the users on the network.

Ethernet is the most widely installed local area network technology. An Ethernet LAN typically uses special grades of twisted pair wires. The most commonly installed Ethernet systems are 10BASE-T and 100BASE-T10, which provide transmission speeds up to 10 Mbps and 100 Mbps respectively.

Factory default settings are the settings that originally applied for a device when it was first delivered from the factory. If it should become necessary to reset a device to its factory default settings, this will, for many devices, completely reset any settings that were changed by the user.

Firewall works as a barrier between networks, e.g. between a Local Area Network and the Internet. The firewall ensures that only authorized users are allowed to access the one network from the other. A firewall can be software running on a computer, or it can be a standalone hardware device.

Focal length is measured in millimeters; the focal length of a camera lens determines the width of the horizontal field of view, which in turn is measured in degrees.

FPS (frames per second) a measure of how much information is used to store and display motion video. The term applies equally to film video and digital video. Each frame is a still image; displaying frames in quick succession creates the illusion of motion. The more frames per second (fps), the smoother the motion appears.

Frame is a complete video image. In the 2:1 interlaced scanning format of the RS-170 and CCIR formats, a frame is made up of two separate fields of 262.5 or 312.5 lines interlaced at 60 or 50 Hz to form a complete frame, which appears at 30 or 25 Hz. In video cameras with a progressive scan, each frame is scanned line-by-line and not interlaced; most are also displayed at 30 and 25 Hz.

FTP (File Transfer Protocol) is an application protocol that uses the TCP/IP protocols, used to exchange files between computers/devices on networks.

Full-duplex means transmission of data in two directions simultaneously. In an audio system this would describe e.g. a telephone system. Half-duplex also provides bi-directional communication, but only in one direction at a time, as in a walkie-talkie system.

G.711 is the default pulse code modulation (PCM) standard for Internet Protocol (IP) private branch exchange (PBX) vendors, as well as for the public switched telephone network (PSTN). G.711 digitizes analog voice signals producing output at 64 kilobits per second (Kbps).

Gain is the amplification factor and the extent to which an analog amplifier boosts the strength of a signal. Amplification factors are usually expressed in terms of power. The decibel (dB) is the most common way of quantifying the gain of an amplifier.

Gateway is a point in a network that acts as an entry point to another network. In a corporate network for example, a computer server acting as a gateway often also acts as a proxy server and a firewall server. A gateway is often associated with both a router, which knows where

to direct a given packet of data that arrives at the gateway, and a switch, which furnishes the actual path in and out of the gateway for a given packet.

HTTP (Hypertext Transfer Protocol) is the set of rules for exchanging files (text, graphic images, sound, video, and other multimedia files) on the web. The HTTP protocol runs on top of the TCP/IP suite of protocols.

HTTPS (Hypertext Transfer Protocol over SSL) is a web protocol used by browsers and web servers to encrypt and decrypt user page requests and the pages returned by the server. The encrypted exchange of information is governed by the use of an HTTPS certificate (issued by a Certificate Authority), which guarantees the authenticity of the server.

Hub is used to connect multiple devices to the network. The hub transmits all data to all devices connected to it, whereas a switch will only transmit the data to the device it is specifically intended for.

ICMP is a network protocol useful in Internet Protocol (IP) network management and administration. ICMP is a required element of IP implementations. ICMP is a control protocol, meaning that it does not carry application data, but rather information about the status of the network itself.

IEEE 802.11 is a family of standards for wireless LANs. The 802.11 standard supports 1 or 2 Mbit/s transmission on the 2.4 GHz band. IEEE 802.11b supports data rates up to11 Mbit/s on the 2.4 GHz band, while 802.11g allows up to 54 Mbit/s on the 5 GHz band.

Interlacing. Interlaced video is video captured at 50 pictures (known as fields) per second, of which every 2 consecutive fields (at half height) are then combined into 1 frame. Interlacing was developed many years ago for the analog TV world and is still used widely today. It provides good results when viewing motion in standard TV pictures, although there is always some degree of distortion in the image.

Internet Explorer (formerly Microsoft Internet Explorer, commonly abbreviated IE or MSIE) is a series of graphical web browsers developed by Microsoft and included as part of the Microsoft Windows line of operating systems, starting in 1995.

IP66 is a two digit number developed by the international electrical Commission, and is used to provide Ingress Protection (IP) rating to a piece of electronic equipment or to an enclosure for electronic equipment. The Ingress protection code indicates the level and amount of protection. The first digit means no ingress of dust; complete protection against contact. The second digit means water projected in powerful jets (12.5mm nozzle) against the enclosure from any direction shall have no harmful effects.

IP camera. The terms IP camera, network camera and Internet camera all refer to the same thing - a camera and computer combined in one unit. It operates as stand-alone unit and only requires a connection to the network.

JPEG (Joint Photographic Experts Group).Together with the GIF file format, JPEG is an image file type commonly used on the web. A JPEG image is a bitmap, and usually has the file extension '.jpg' or ".jpeg." When creating a JPEG image, it is possible to configure the level of compression to use. As the lowest compression (i.e. the highest quality) results in the largest file, there is a trade-off between image quality and file size.

kbit/s (kilobits per second) is a measure of the bit rate, i.e. the rate at which bits are passing a given point. See also Bit rate.

LAN (Local Area Network) is a group of computers and associated devices that typically share common resources within a limited geographical area.

Lux is a standard unit of illumination measurement.

MAC address (Media Access Control address) is a unique identifier associated with a piece of networking equipment, or more specifically, its interface with the network. For example, the network card in a computer has its own MAC address.

Mbit/s (Megabits per second) is a measure of the bit rate, i.e. the rate at which bits are passing a given point. Commonly used to give the "speed" of a network. A LAN might run at 10 or 100 Mbit/s.

Motion JPEG is a simple compression/decompression technique for network video. Latency is low and image quality is guaranteed, regardless of movement or complexity of the image. Image quality is controlled by adjusting the compression level, which in turn provides control over the file size, and thereby the bit rate.

MPEG-4 is a group of audio and video coding standards and related technology. The primary uses for the MPEG-4 standard are web (streaming media) and CD distribution, conversational (videophone), and broadcast television. Most of the features included in MPEG-4 are left to individual developers to decide whether to implement them or not. This means that there are probably no complete implementations of the entire MPEG-4 set of standards. To deal with this, the standard includes the concept of "profiles" and "levels", allowing a specific set of capabilities to be defined in a manner appropriate for a subset of applications.

Multicast is a bandwidth-conserving technology that reduces bandwidth usage by simultaneously delivering a single stream of information to multiple network recipients.

Network Time Protocol (NTP) is a protocol for synchronizing the clocks of computer systems over packet-switched, variable-latency data networks. It is designed particularly to resist the effects of variable latency by using a jitter buffer.

NTSC (National Television System Committee) is an analog color encoding system used in television systems in Japan, the United States and other parts of the Americas. NTSC defines the video signal using 525 TV lines per frame, at a refresh rate equal to 30 frames per second. See also PAL.

ONVIF (Open Network Video Interface Forum) is a global and open industry forum with the goal to facilitate the development and use of a global open standard for the interface of physical IP-based security products. Or in other words, to create a standard for how IP products within video surveillance and other physical security areas can communicate with each other. ONVIF is an organization started in 2008 by Axis Communications, Bosch Security Systems and Sony.

PAL (Phase Alternating Line) is an analog color encoding system used in television systems in Europe and in many other parts of the world. PAL defines the video signal using 625 TV lines per frame, at a refresh rate equal to 25 frames per second.

Power over Ethernet or PoE provides power to a network device via the same cable as used for the network connection. This is very useful for IP-Surveillance and remote monitoring applications in places where it may be too impractical or expensive to power the device from a power outlet.

PPP (Point-to-Point Protocol) is a protocol that uses a serial interface for communication between two network devices. For example, a PC connected by a phone line to a server.

Point-to-Point Protocol over Ethernet (PPPoE) is a network protocol for encapsulating Point-to-Point Protocol (PPP) frames inside Ethernet frames. It is used mainly with DSL services where individual users connect to the DSL modem over Ethernet and in plain Metro Ethernet networks.

Progressive scan, as opposed to interlaced video, scans the entire picture, line by line every sixteenth of a second. In other words, captured images are not split into separate fields as in interlaced scanning.

Jack-45 is an eight-wire connector used to connect computers onto a local-area networks (LAN), especially Ethernets. RJ-45 connectors look similar to the RJ-11 connectors used for connecting telephone equipment, but they are a bit wider.

Router is a device that determines the next network point to which a packet should be forwarded on its way to its final destination. A router creates and/or maintains a special routing table that stores information on how best to reach certain destinations. A router is sometimes included as part of a network switch.

RTP is an Internet protocol for the transport of real-time data, e.g. audio and video. It can be used for media-on-demand as well as interactive services such as Internet telephony.

RTSP (Real Time Streaming Protocol) is a control protocol, and a starting point for negotiating transports such as RTP, multicast and Unicast, and for negotiating codecs.

RTSP can be considered a “remote control” for controlling the media stream delivered by a media server. RTSP servers typically use RTP as the protocol for the actual transport of audio/video data.

Shutter is the device on the camera that opens and closes to control how long the focal plane is exposed to light.

SMTP is used for sending and receiving e-mail. However, as it is "simple," it is limited in its ability to queue messages at the receiving end, and is usually used with one of two other protocols, POP3 or IMAP. These other protocols allow the user to save messages in a server mailbox and download them periodically from the server.

SMTP authentication is an extension of SMTP, whereby the client is required to log into the mail server before or during the sending of email. It can be used to allow legitimate users to send email while denying the service to unauthorized users, such as spammers.

SSL/TLS (Secure Socket Layer/Transport Layer Security). These two protocols (SSL is succeeded by TLS) are cryptographic protocols that provide secure communication on a network. SSL is commonly used over HTTP to form HTTPS, as used e.g. on the Internet for electronic financial transactions. SSL uses public key certificates to verify the identity of the server.

Subnet & subnet mask is an identifiably separate part of an organization's network. Typically, a subnet may represent all the machines at one geographic location, in one building, or on the same local area network (LAN). Having an organization's network divided into subnets allows it to be connected to the Internet with a single shared network address. The subnet mask is the part of the IP address that tells a network router how to find the subnet that the data packet should be delivered to. Using a subnet mask saves the router having to handle the entire 32-bit IP address; it simply looks at the bits selected by the mask.

Switch is a network device that connects network segments together, and which selects a path for sending a unit of data to its next destination. In general, a switch is a simpler and faster mechanism than a router, which requires knowledge about the network and how to determine the route. Some switches include the router function.

TCP is used along with the Internet Protocol (IP) to transmit data as packets between computers over the network. While IP takes care of the actual packet delivery, TCP keeps track of the individual packets that the communication (e.g. requested a web page file) is divided into, and, when all packets have arrived at their destination, it reassembles them to re-form the complete file.

TCP is a connection-oriented protocol, which means that a connection is established between the two end-points and is maintained until the data has been successfully exchanged between the communicating applications.

Time to live (TTL) is mechanism that limits the lifespan of data in a computer or network. TTL may be implemented as a counter or timestamp attached to or embedded in the data. Once the prescribed event count or timespan has elapsed, data is discarded. In computer networking, TTL prevents a data packet from circulating indefinitely. In computing applications, TTL is used to improve performance of caching or improve privacy.

UDP is a communications protocol that offers limited service for exchanging data in a network that uses the Internet Protocol (IP). UDP is an alternative to the Transmission Control Protocol (TCP). The advantage of UDP is that it is not required to deliver all data and may drop network packets when there is e.g. network congestion. This is suitable for live video, as there is no point in re-transmitting old information that will not be displayed anyway.

Universal Plug and Play (UPnP) is a set of networking protocols for primarily residential networks without enterprise class devices that permits networked devices, such as personal computers, printers, Internet gateways, Wi-Fi access points and mobile devices to seamlessly discover each other's presence on the network and establish functional network services for data sharing, communications, and entertainment.

Uniform Resource Locator or Unified Resource Locator (URL) is a character string that specifies where a known resource is available on the Internet and the mechanism for retrieving it.

Wireless Application Protocol (WAP) is a technical standard for accessing information over a mobile wireless network. A WAP browser is a web browser for mobile devices such as mobile phones (called "cellular phones" in some countries) that uses the protocol.

Web server is a program, which allows Web browsers to retrieve files from computers connected to the Internet. The Web server listens for requests from Web browsers and upon receiving a request for a file sends it back to the browser.

The primary function of a Web server is to serve pages to other remote computers; consequently, it needs to be installed on a computer that is permanently connected to the Internet. It also controls access to the server whilst monitoring and logging server access statistics.

Wireless LAN is a wireless local area network that uses radio waves as its carrier: where the network connections for end-users are wireless. The main network structure usually uses cables.